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case report

Guided maxillary arch implant restoration

Peri-implantitis: Can it be treated without surgery?

interview

The quest for safe and sterile implants

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Dr Rolf Vollmer
First Vice President
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Looking ahead in 2023

Dear colleagues and friends,

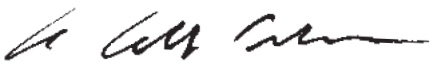
The past few years have presented significant challenges for the dental community, particularly with the pandemic and the shift to virtual events. However, despite these challenges, the demand for dental implants continues to grow, reflecting their value as a solution for missing teeth. This growth has led to an increased focus on research and development in the field, and new techniques and technologies are being developed all the time. This is a testament to the dedication and innovation of the professionals in our discipline.

I am especially looking forward to the upcoming International Dental Show in Cologne in Germany. This event, the world's largest trade fair for the dental industry, offers an unparalleled opportunity for us to come together as a community, meet old friends and partners, and explore the latest innovations in dentistry. I would like to invite you to visit the German Association of Dental Implantology (DGZI) in Hall 11.2 at Booth S010/T011. Our members will be in attendance, ready to share their experiences and insights with you. At the DGZI, we have a strong commitment to advancing research in implantology. Our society is dedicated to fostering and promoting ongoing research in order to improve patient outcomes and advance our understanding of this complex and dynamic area of dentistry. This includes exploring new materials, surgical techniques and ways to optimise the integration of implants with the surrounding tissue.

Although there is still some time to go, I would also like to use this as an opportunity to announce the DGZI congress in Hamburg in Germany on 6 and 7 October. This international event is a great chance for implantologists to come together and share their experiences, insights and perspectives on the latest advancements in our field. I encourage all of you to attend and contribute to the discussions, as we work together to further the progress of implantology.

In conclusion, I am proud to be a part of this community and to work alongside so many dedicated and talented professionals. I look forward to continuing to support the growth and development in implantology and to the opportunities for learning and networking that lie ahead.

Yours,



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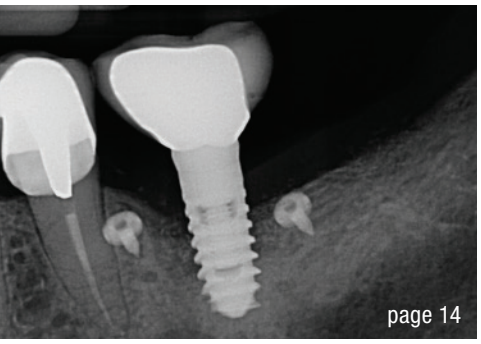

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Guided maxillary arch implant restoration: Language and cross-border collaboration are no barrier with hybrid workflow

Dr Florian Obădan & Jorge Reyes Minguillán, Romania & Spain

The rehabilitation of a failing maxillary dentition requires comprehensive planning and appropriate tools to execute a treatment which will meet the patient's expectations and accomplish the biological principles for long-term successful restoration. Nowadays, digital workflows aid clinicians in achieving this accuracy with holistic treatment planning. Digitisation in implant dentistry has ensured that the dental technician and the clinician are in sync at every step of planning and execution, as the exchange of data between them can be done remotely with the click of a button. Guided implant placement ascertains the precise transfer of the virtually planned implant positions to the surgical site. This pre-planned implant positioning facilitates immediate loading, as the provisional prosthesis can be milled and kept ready prior to the surgery, requiring only minor relining and adjustments after the surgery. Guided implant placement with immediate loading not only restores function, aesthetics and the patient's confidence instantly, but also has high patient acceptability owing to the minimised surgical trauma, postoperative discomfort and reduced treatment duration.


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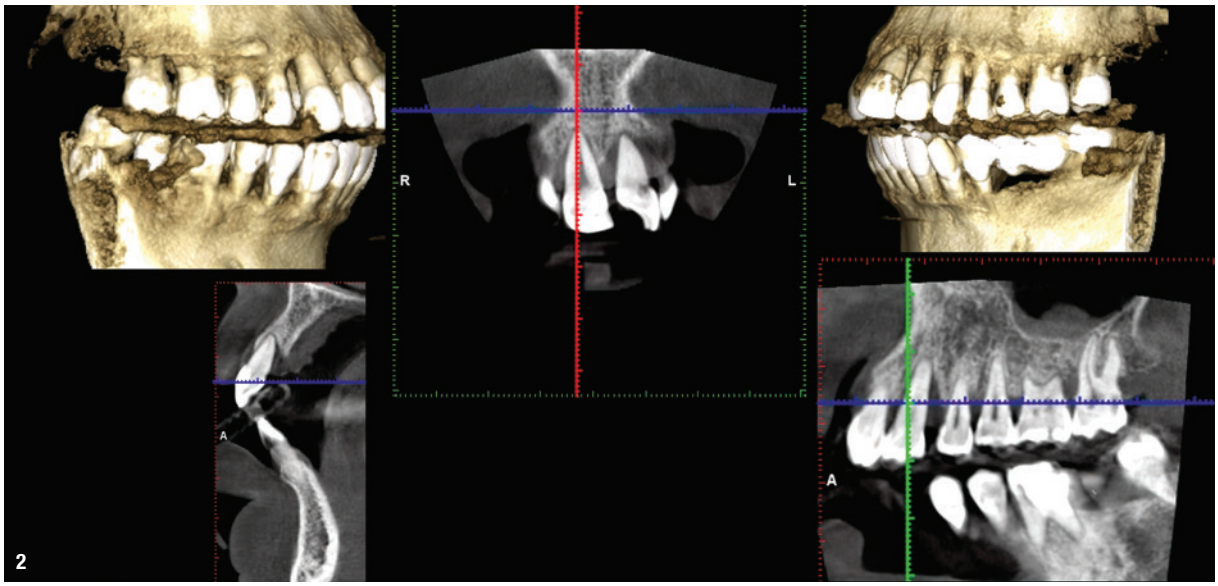
The following case report showcases the planning and execution of the SKY fast & fixed full-arch protocol (bredent



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medical) with synchronisation of a complete digital workflow between a dental technician in Spain and a clinician in Romania who do not speak a common language.

Case presentation

A middle-aged woman presented to the dentist's clinic in Alexandria in Romania with a mobile central incisor, seeking a long-term highly aesthetic solution. A full-mouth clinical assessment and radiographic examination with a dental panoramic tomogram and CBCT scan (Figs. 1 & 2) were carried out. Based on the severity, complexity of management and extent of distribution, a diagnosis of generalised severe periodontitis with potential loss of dentition was made, and the patient was advised to undergo total extraction of the maxillary teeth (other than the terminal molars) and immediate placement of implants and their immediate loading using the SKY fast & fixed treatment protocol.[1–4]

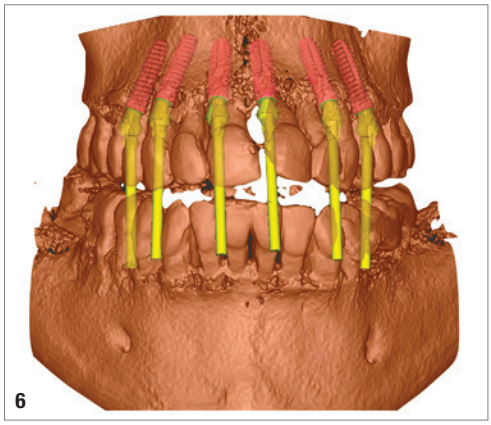
Preoperative phase

High-resolution intra-oral images and profile pictures were taken (Figs. 3–5). Preliminary impressions were made with irreversible hydrocolloid (alginate), as there was a possibility of tooth loss (owing to severe tooth mobility) with the use of silicone-based materials for impression taking. The resulting models were scanned using the laboratory 3D scanner, and the STL files, radiographs and images were transferred to the dental technician in Madrid in Spain.

The dental technician used exocad for the digital mock-up and e-mailed it to the clinic. The CAD was printed (the model without the teeth, the model with the new tooth set-up and the teeth detached from the model) using a 3D printer. The STL files were used for planning the ideal prosthetic positions of the implants (six 4 × 14 mm copaSKY implants, bredent medical). CoDiagnostiX (Dental Wings) was used for planning the implant positions, as well as the appropriate abutments (Figs. 6–8). The surgical guide was fabricated based on the virtually planned ideal positions of the six implants (Figs. 9 & 10). The provisional prosthesis was designed in Madrid by the dental technician, but milled and kept ready prior to surgery in Romania.

Surgical phase

The procedure was done under local anaesthesia with articaine with 1:100,000 adrenaline. Atraumatic extraction of all the maxillary teeth except the terminal second molars (as they served as a vertical stop for maintaining occlusal height) was done, and the extraction sockets were thoroughly curetted to remove the granulation tissue. After mechanical debridement, to ensure complete disinfection of the site, antimicrobial photodynamic therapy was per-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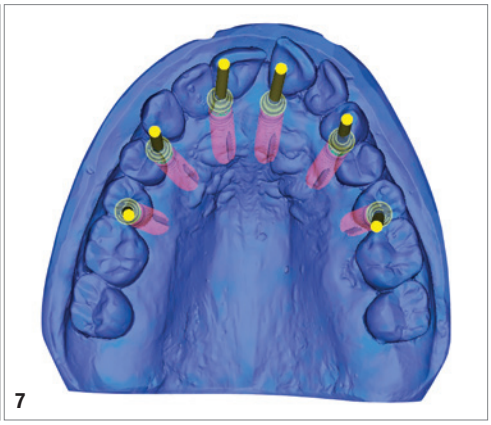
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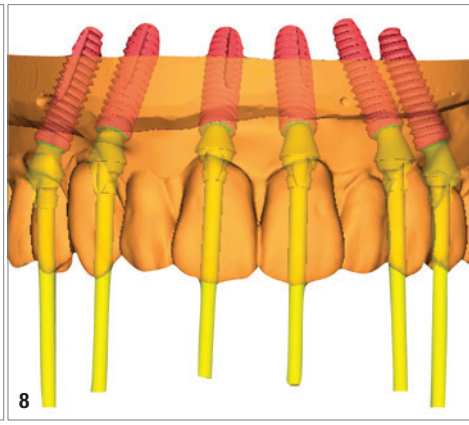
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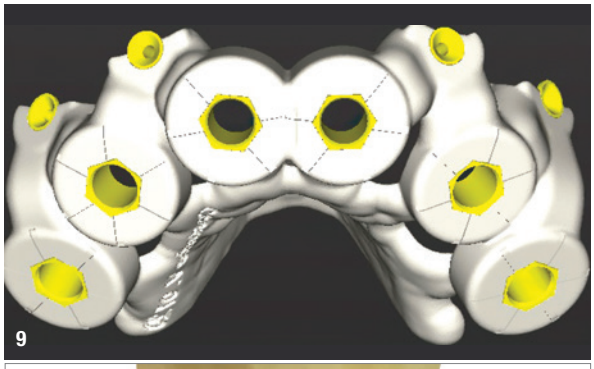
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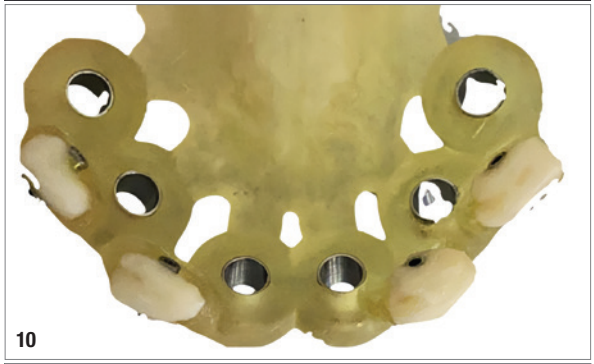
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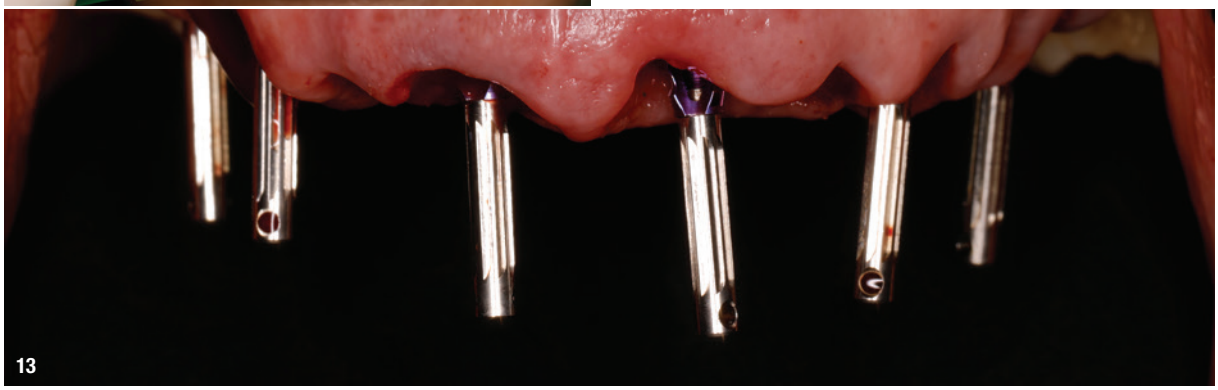
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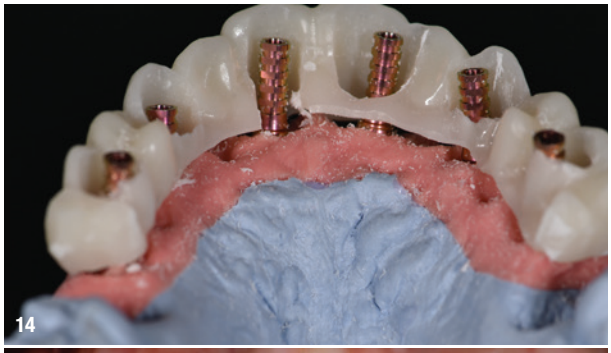
formed. A blue photosensitiser (methylene blue) was applied inside each socket and left in situ for 60 seconds to stain the bacteria. After rinsing off of the liquid, each socket was then exposed to the diode laser for 1 minute. This ensures focused antibacterial action by destruction of the bacteria in the biofilm by singlet oxygen molecules. The procedure was completely flapless to minimise surgical trauma, and it facilitated seamless seating of the surgical guide. The surgical guide was stabilised intra-orally with four fixation pins placed buccally (Fig. 11). The surgical kit was used for fully shaft-guided implant placement, which is more convenient than the sleeve-in-sleeve and spoon systems. It is based on the principle of maximum safety when reaching the drilling depth and angulation by guiding the drills through the high-precision drill sleeve (Fig. 12). Sequential drilling was done, and primary stability of more than 40 Ncm was obtained for all six implants, facilitating predictable immediate loading. Titanium abutments were installed on all six implants, and a closed-tray impression was taken (Fig. 13). The milled provisional prosthesis was placed on the quickly poured model to make the holes in the prosthesis to facilitate intra-oral relining with Qu-Resin and Qu-Connector (bredent medical) to ensure a passive fit of the screw-retained prosthesis (Figs. 14 & 15). The titanium copings were picked up in the provisional prosthesis after relining, finished and polished extra-orally, and inserted on to the implants to a torque of 18 Ncm (Figs. 16 & 17). The provisional prosthesis was kept out of all eccentric contact, and light centric contacts were maintained. Biomechanical principles were applied by preventing cantilevers which could weaken and fracture the provisional prosthesis.

The patient was instructed to avoid hard food, and oral hygiene instructions were reinforced. She was extremely satisfied with her new smile and regained her confidence.

Prosthetic phase

The patient was recalled after eight months for the final prosthetic phase. Intra-oral scans were taken for fabrication of the final prosthesis (Fig. 18), the intention being to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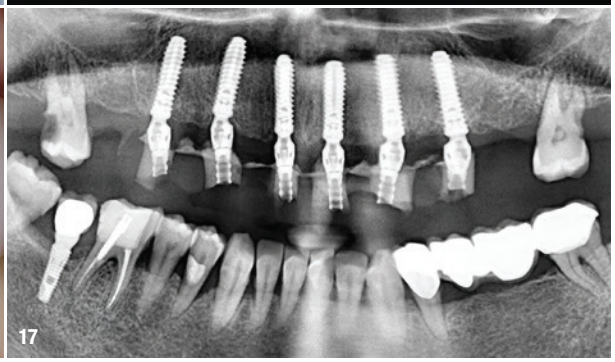
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plan, start and finish the case completely digitally. This, however, was not possible because there was a mismatch in fitting the components which the laboratory had milled for verification on the printed models. The decision was made to go the analogue route.

Titanium copings were inserted, and after confirmation of proper seating with a panoramic radiograph, intra-oral splinting of the copings was done to ensure accurate impression taking. Putty and light-bodied wash impressions were taken, carefully packed and sent to Madrid for fabrication of the final prosthesis (Figs. 19a & b).

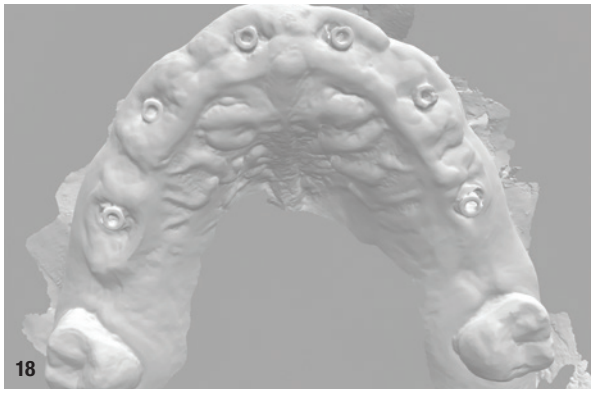
After obtaining the master model, the dental technician made the design of the framework, milled it in PMMA and sent it to the clinic. The provisional prosthesis, having a passive fit, because it was fixed intra-orally, was used as a verification key for the master model. Because there was a passive fit, the framework was cemented on to the prefabricated copings with DTK-Adhesive (bredent medical) on the model by the dental technician (Figs. 20 & 21).

The solution for the long-term restoration was determined based on the inter-arch distance and passivity of fit, as well as protection of the implants. The choice of material for the definitive prosthesis framework was laser-sintered titanium with composite build-up teeth (Figs. 22–24). The laser-sintered titanium, being produced with an additive method, did not have undercut areas, and it was fabricated by the dental technician in Spain.

Canine-guided occlusion was established without difficulty. Function and aesthetics were restored satisfactorily for the patient, and the final outcome was extremely gratifying for the surgical and prosthetic team (Figs. 25 & 26).

Discussion

Chronic generalised periodontitis can result in insidious loss of periodontal attachment, tooth mobility and poor prognosis of teeth. The SKY fast & fixed treatment protocol aims for immediate restoration of function and aesthetics for management of failing dentition. A recent study by Slutzkey et al. concluded that, if the prerequisites for immediate loading, such as high primary stability of ≥ 30Ncm, splinting of the implants via a provisional prosthesis and the use of bone-level implants with a sand-blasted and acid-etched surface, are fulfilled, then full-arch fixed restorations supported by a combination of axial and tilted implants can be a viable treatment option to rehabilitate the terminal dentition of patients suffering from severe generalised periodontitis.[5]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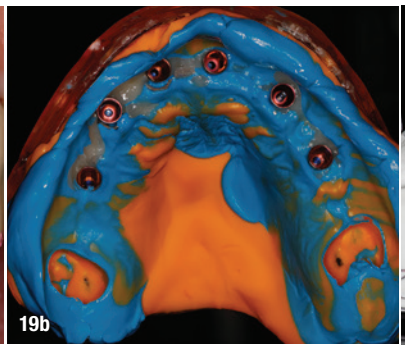
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Immediate implant placement with the application of antimicrobial photodynamic therapy has made the procedure more predictable. Antimicrobial photodynamic therapy was used in the current case at the point of extraction of the diseased and compromised teeth to ensure disinfection and better osseointegration of the implants. Antimicrobial photodynamic therapy has gained much attention as a non-invasive and biocompatible approach that can be employed to prevent biological complications associated with implants.[6] Histological and histo-morphometric analyses have demonstrated significantly better results for immediate implant placement in sockets decontaminated by mechanical debridement with the adjunctive use of antimicrobial photodynamic therapy.[7] The sites which received this combined therapy led to osseointegration of the implants without evidence of inflammation; conversely, evidence of peri-implantitis was observed where antimicrobial photodynamic therapy was not used.[7]

The purpose of using implant software is to plan the placement of the implants in prosthodontically driven positions.[8] The advantages of guided surgery are that the patient's chair time is decreased, the surgery is more predictable and less stressful, the implants are placed in a restoratively driven manner, and the case difficulty is learned ahead of time.[9–11] In other words, guided surgery in full-mouth implant rehabilitation has also made immediate restoration of function and aesthetics easier and more precise and has improved treatment acceptability by the patient. However, in full-arch rehabilitation, the provisional restorations cannot be cemented to abutments before surgery owing to passivity concerns, as seen in the current case report.[12] The pre-milled breCAM.multiCOM prosthesis (bredent medical) was relined intra-orally to ensure passivity of the prosthesis.

Full-arch fixed rehabilitation by means of guided surgery and immediate loading of implants placed in fresh extraction sockets appears to be a reliable and successful procedure.[13] Selection of the final prosthesis material was done based on the inter-arch distance (from implant platform/ridge crest to incisal edge/occlusal plane of opposing dentition).[14] Various materials were considered before making the final choice.

High-impact polymer composite teeth with a BioHPP (ceramic-reinforced PEEK) framework was considered; however, the amount of inter-arch space necessary to achieve mechanical stability and fracture resistance of the framework was not available. Porcelain Fused to Metal was also excluded, because of the lack of adequate rigidity of the metal framework. The modulus of elasticity of the ceramic is not optimal in this case. To protect both the implants and the antagonist arch, a titanium framework was selected, on which the technician set up the teeth from composite, a well-established soft-bite restorative material. The framework was made by laser sintering because of the improved qualities of the surface of the metal compared with those of milled titanium. Cobalt–chromium was not considered because of evidence of reactivity of this alloy in the oral environment.[15] For long-term success, a passive and perfect fit was achieved using prefabricated prosthetic components.


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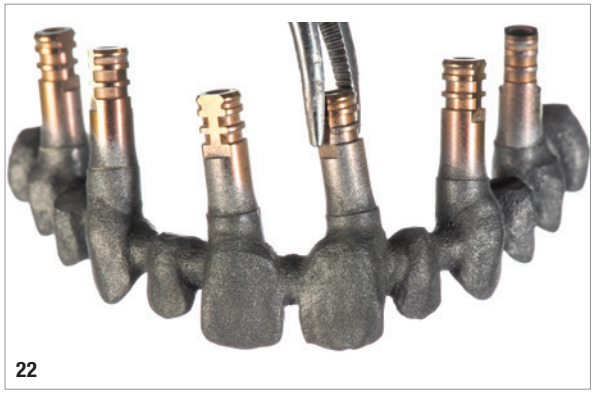
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Conclusion

Advances in materials science and the boom of digitisation and digital workflows in dentistry have provided an array of options for tackling the same clinical situation. This means that there are more treatment options for the various clinical indications. In addition, the interoperability of devices and software systems, the possibility of connecting over video calls and the ease of transferring a large number of data sets over the internet make cross-border collaboration a reality even in cases such as this one, where the clinician and dental technician did not speak a common language, except for the language of digital dentistry. It is clear that clinical decisions should not be solely based on trends, but supported by thorough treatment planning with the technical, surgical and restorative teams, based on expertise, comfort and confidence of the clinician in synchronisation with the dental technician to convert the virtual planning into reality for long-term success. The comfort and safety of the patient should be in focus if increased patient satisfaction at affordable cost is to be achieved.

Acknowledgements

We would like to acknowledge dental technician Vasile Bacila from Slatina in Romania and dentist Dr Magdalena Eugenia Obădan of Implant Consult in Alexandria in Romania.

about the author

Dr Florian Obădan has attended numerous courses to specialise in his techniques, practising in countries such as Romania, India, Georgia, and Armenia. In 2015, he founded the Implant Consult clinic in the city of Alexandria, which offered a different perspective and approach to the idea of a dental clinic. He graduated from university in Craiova in 2001, and since then he has been practising in the field of dentistry. Supported by his family, he attended advanced training courses, and through his perseverance and desire, Dr Obădan realised in 2009 the first Fast and Fixed implant in Romania, thus contributing to the innovation of a difficult field by applying a safe, predictable treatment, which offers the possibility of recovering teeth in a single day, by implant.

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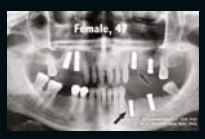

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Peri-implantitis: Can it be treated without surgery?

Literature

Prof. Hady Haririan, Austria

With the introduction of a uniform classification of periodontal and peri-implant disease in 2018, definitions of health and disease have now also been established for implants.[1] Comparable evidence on peri-implantitis should therefore be possible in the future. In recent years, there have been enormous developments in implantology with regard to the digital workflow and materials, but also new insights into what can lead to failure or how to counteract peri-implant mucositis and, subsequently, peri-implantitis.[2]

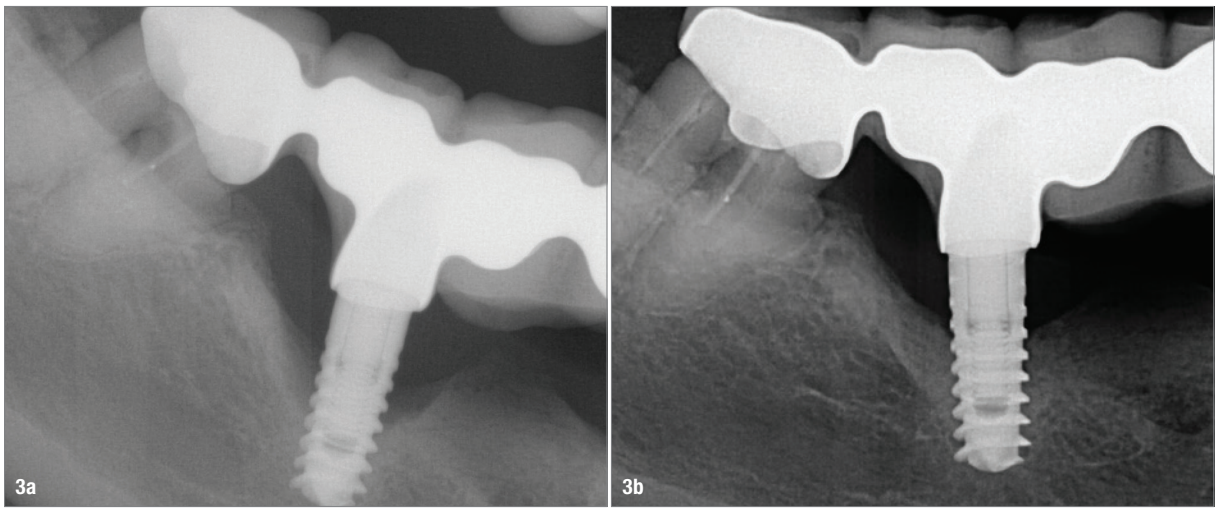
The proportion of patients with implants is increasing, due to an ageing population. A study at the University Clinic of Dentistry Vienna in Austria showed that the proportion of older patients with implants is continuously increasing.[3] For example, the proportion of patients between 70 and 75 years of age with implants in the outpatient clinic was already 30% in 2017; in 2013, this was only around 20%.[3] Old age is linked to various dimensions, usually accompanied by various diseases, which in turn can lead to polypharmacy and to malnutrition. In order to maintain stable occlusion in old age, people increasingly rely on fixed prostheses, which, however, are sometimes more difficult to clean than removable prostheses. The risk of complications also increases with age, and peri-implantitis is almost inevitable if prophylactic measures and the reduction of risk factors are not undertaken promptly and closely monitored.

Once bone resorption around the implant has begun, there is no predictable therapy that reliably leads to cessation of the inflammation or to regeneration, as is the case with periodontitis. The established treatment paradigm is that a conservative approach is limited and surgical intervention—resective or regenerative—is inevitable once several threads of the implant have become exposed. However, the following patient cases are intended to demonstrate that even initially hopeless situations can be resolved by relatively simple therapeutic measures if peri-implantitis has not yet progressed to the point of complete mobility of the implant (which was the situation in the first case presented).

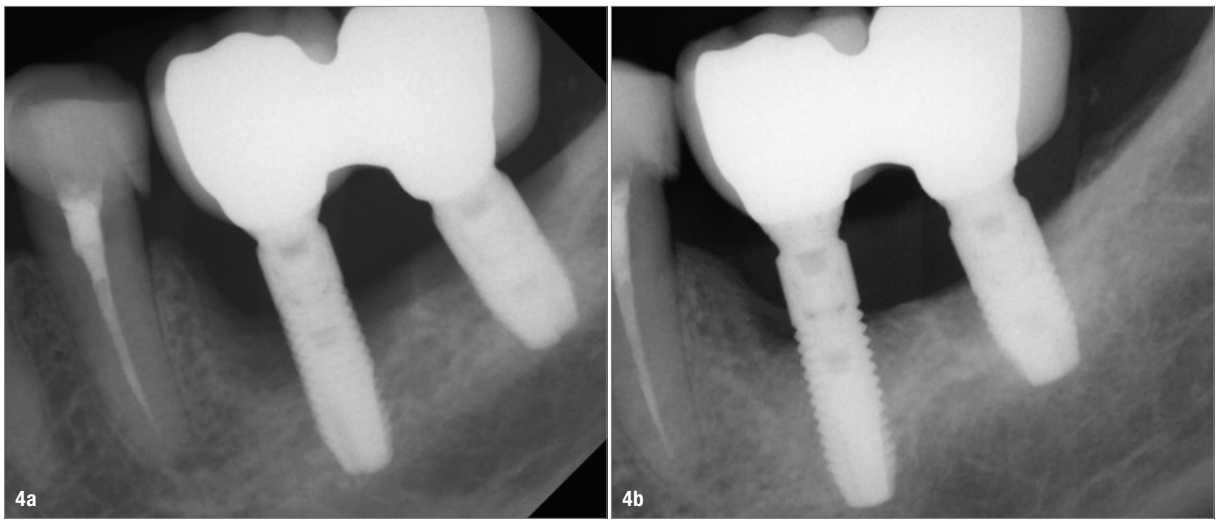
Peri-implantitis prevalence and risk factors

On the one hand, implants as replacements for lost teeth have a relatively high success rate over observation periods of more than ten years.[4] On the other hand, it has been shown that 10–50% of implants showed signs of peri-implantitis after ten years. In general, the prevalence of peri-implant mucositis is as much as 80% and that of peri-implantitis between 28 and 56%.[5] Peri-implantitis

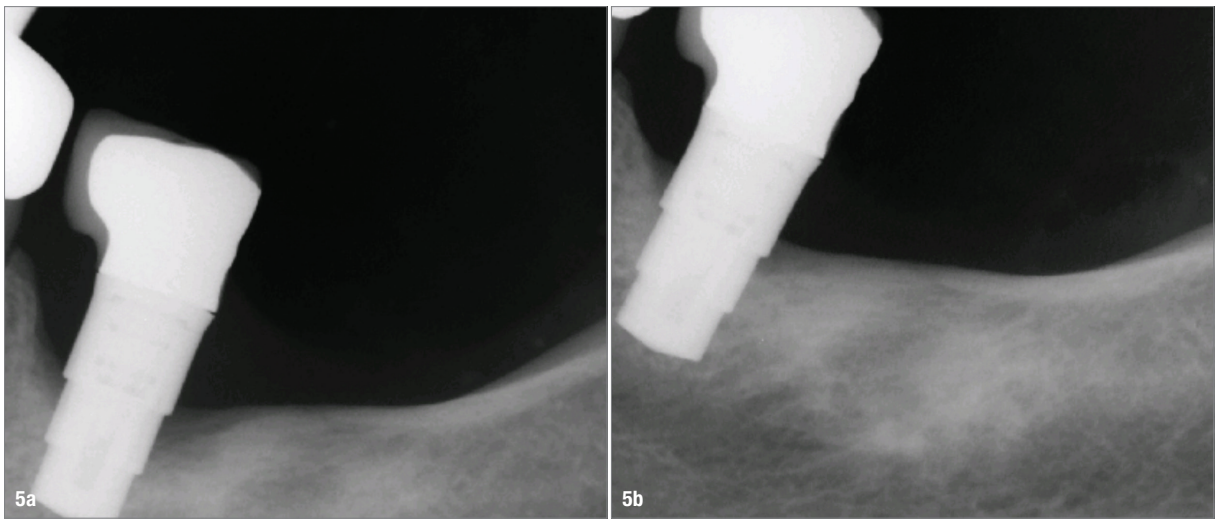
Fig. 1: The patient presented because of a broken denture tooth and loose restoration. Lifting of the upper lip revealed multiple fistula exits with pus discharge.
Fig. 2: No further conservative therapy could be initiated for the maxillary implants.



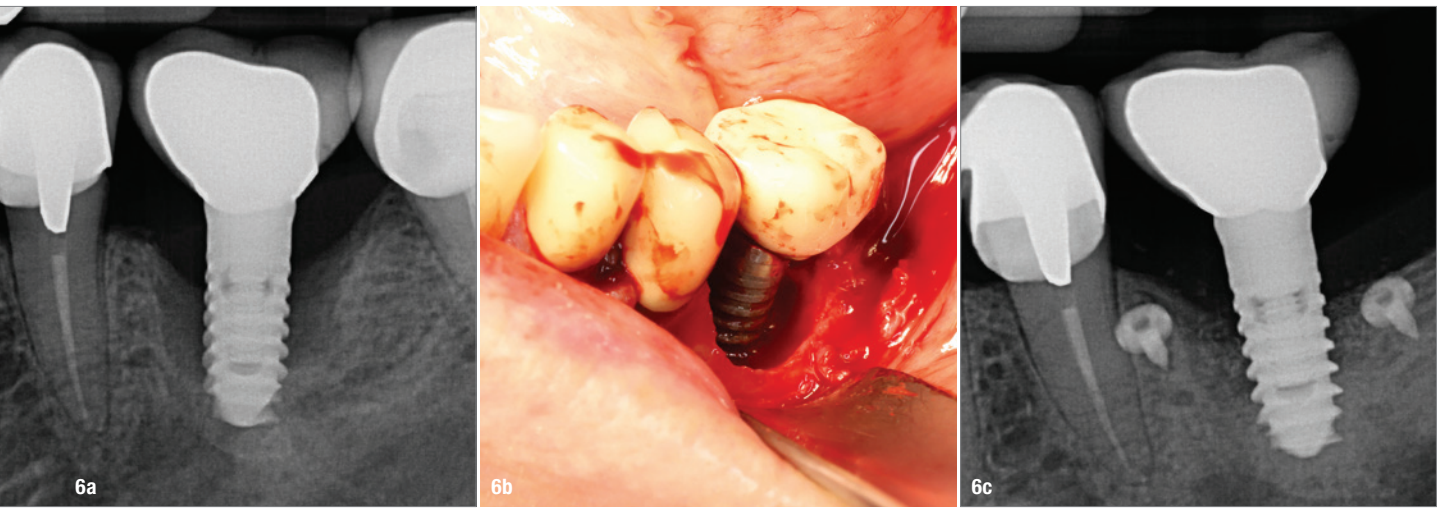
Figs. 3a & b: Situation before conservative therapy **(a)** of peri-implantitis affecting implant #46 in the second case and six to 12 months thereafter **(b)**.



Figs. 4a & b: Situation before conservative therapy **(a)** of peri-implantitis affecting implants #36 and 37 in the third case and six to 12 months thereafter **(b)**.



Figs. 5a & b: Situation before conservative therapy **(a)** of peri-implantitis affecting implant #36 in the fourth case and six to 12 months thereafter **(b)**.



Figs. 6a–c: Implant #36 in the fifth case was initially planned for explantation, but could ultimately be preserved only with regenerative surgical measures (one-year follow-up).

cases are rising in daily practice, but their development can usually be linked to known risk factors.[6] These include:

- smoking;
- history of periodontitis;
- poor oral hygiene;
- irregular supportive periodontal therapy intervals; and
- systemic disease (poorly controlled diabetes, cardiovascular disease, immunosuppression).

Sometimes it is a combination of several risk factors that drastically increase the risk of complications. Zitzmann et al. have already noted in a review that the incidence of peri-implantitis is almost six times higher in patients with periodontitis compared with non-periodontitis patients.[7]

Patient cases

Implant loss due to poor oral hygiene and lifestyle habits

In the following patient case, several factors led to failure. Despite the patient smoking more than 40 cigarettes daily, implants were placed in such a way that a fixed restoration was possible. The patient stated that she could not tolerate any palatal coverage and wanted a fixed option. Since her smoking, abundant alcohol consumption and poor brushing habits were not improved, peri-implantitis was not a surprise diagnosis. This usually occurs around seven years after implantation if—like in the following case—periodontitis treatment for the remaining dentition is ignored and the patient's lifestyle aggravating to the periodontium. The patient presented because of aesthetic problems, but also because the implants were already very loose (Fig. 1). Conservative periodontal therapy with instruction on the correct use of interdental brushes could not prevent the loss of the implants (Fig. 2).

Implant preservation with the aid of subgingival cleaning by air-scaler and concomitant administration of systemic antibiotics

Is conservative peri-implantitis therapy ever enough to resolve advanced peri-implantitis cases? The following cases show that a single subgingival cleaning with air-scaler and adjunctive systemic antibiotics helped to regenerate the bone around the implants. A single-blind randomised clinical trial concluded that systemic adjunctive antibiotic administration does not necessarily provide a clinically relevant benefit when, for example, amoxicillin and metronidazole are administered systemically in combination.[8] Would the same effect have occurred in the cases shown here even without adjunctive metronidazole administration for seven days after subgingival cleaning? According to a more recent randomised clinical trial, the administration of metronidazole as an adjunct to non-surgical peri-implantitis therapy resulted in significant improvements in clinical, radiographic and microbiological parameters after 12 months of follow-up.[9]

In the second, third and fourth patient cases (Figs. 3–5), subgingival debridement was performed once by air-scaler and then metronidazole was taken at a dosage of 500 mg three times daily for seven days.

Implant retention through interdisciplinary treatment

Not all cases develop as promisingly as the second, third and fourth cases did. The conservative approach should always be attempted first, and if this does not lead to the desired clinical success, further surgical measures can be considered, including the use of methods for which there is not yet a strong evidence base.[10] The fifth case involved an implant that was inititally thought to be lost, but could have been finally saved after periodontitis/peri-implantitis treatment and subsequent augmentation and use of a membrane as well as use of the GalvoSurge

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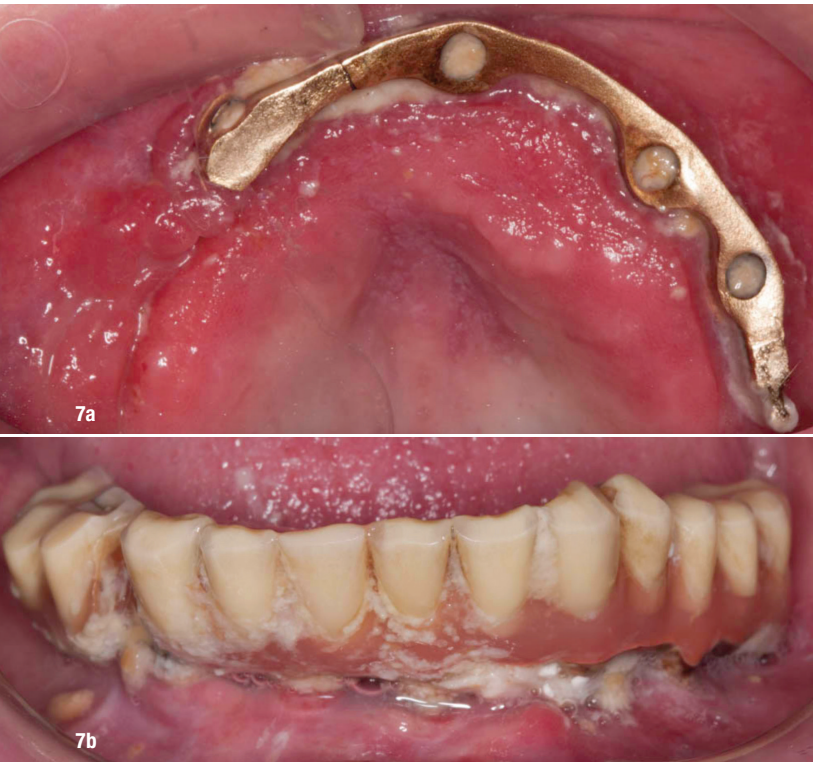

Figs. 7a & b: Situation of a removable prosthesis in the upper jaw and a screw-retained prosthesis in the lower jaw in a patient.

implant cleaning system (Fig. 6). Such interventions are relatively costly and the corresponding costs for augmentation material and the application of the electrode in that procedure are ultimately borne by the patients, who have an additional financial outlay in order to save the implant. Surgical interventions can only take place in an operating theater or clinic—a challenge that older people are usually no longer able to cope with, as they are largely no longer able to attend an appointment on their own.[11]

Ultimately, the best peri-implantitis therapy is prevention and control of risk factors, ideally before implant placement begins. In my view, the most common mistake is inadequate peri-implantitis prevention and inadequate therapy, which usually consists only of oral hygiene by the prophylaxis assistant. Sometimes patients are also instructed to attend oral hygiene sessions every few weeks—but this will not stop already existing peri-implantitis, and further bone loss will occur.

The following scheme can help to prevent complications with implants:

- regular checks using a conventional periodontal probe (a special plastic implant probe is not necessary, but can make access for probing a little easier);
- annual close-up check of implants to detect incipient bone loss as soon as possible;
- screw-retained implants to make it easier to deal with complications;
- a backup strategy for older people so that initially fixed restorations can be converted into removable ones—supported on the same implants;
- cleanable design of the superstructure—no artificial gingivae up to the alveolar ridge;
- conscientious training on using interdental brushes—often people are still instructed on the use of dental floss, which is usually insufficient when cleaning the implant superstructure to remove plaque from the often wide interdental spaces.

Ageing population

According to the United Nations, the global proportion of people over the age of 65 will rise to over 1.5 billion by 2050, and this population group will account for 25–40% of the total population in the EU. As the population ages, so does the proportion in need of care. According to the Austrian Federal Statistical Office, for example, 70% of women older than 90 and around 50% men in this age group require care, most of which is provided at home by relatives. How do complex and possibly even fixed implant restorations fit into the care regime? Even with patients who are institutionalised, the nursing staff seem to be incapacitated (for example, the sixth case is that of a patient from a Viennese nursing home; Fig. 7). It is therefore of crucial importance to also offer regular recall to the older generation, especially to those who can no longer visit the dental office on their own. Mobile units are used for this purpose, which unfortunately currently only take place on a project basis and have not yet become established for the general public in Austria.[12]

about the author

Prof. Hady Haririan is head of the Department of Periodontology at the dental clinic of the Sigmund Freud University in Vienna in Austria. He studied dentistry at the Medical University of Graz in Austria and the Paris Descartes University in Paris in France. He completed postgraduate training in periodontics at the Medical University of Vienna, graduating with an MSc in periodontology in 2012. In 2017, he finished his doctoral studies in the regeneration of bones and joints programme at the same university. In 2019, he completed his habilitation in the field of periodontology. He has been a board member of the Österreichische Gesellschaft für Parodontologie (Austrian Society of Periodontology) since 2013 and its secretary general since 2019.

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Dual-wavelength laser treatment of osteotomy site to increase the success rate of implant placement

Dr Sean Chiu, USA

The focus of this case report is to demonstrate the efficacy of the dual-wavelength (2,940 nm Er:YAG and 1,064 nm Nd:YAG) laser protocol used in our office and its role in increasing the success rate of implant placement. Success is defined as the decreased risk of peri-implantitis and of resulting infections around the implant, the decreased risk of implant failure and of postoperative complications of implant placement, and the increased stability of implants placed into the surrounding bone.

It has previously been shown that the Er:YAG laser can be used for removal of granulation tissue in both the soft tissue and bone and for superficial disinfection of the implantation site. Furthermore, it can be used to roughen the osteotomy surface for surface modification and hence better cell attachment, as well as to stimulate healing. Decortication using the Er:YAG laser has been shown to increase blood supply to the bone surrounding the implant for increased healing capabilities and to support overlying grafts. The Er:YAG laser has a low risk of heating the bone and of carbonisation owing to its very nature of superficial ablation as well as owing to the use of water spray, which cools the site. This laser has also been found to have a superficial photo-biomodulation effect.

The Nd:YAG laser is used for deep disinfection inside the osteotomy by reducing the periopathogen load in the cortical bone after extraction of teeth and inadequate curettage or degranulation of the bone and socket. Multiple studies have reported comparisons with conventional drills and burs, which, when used alone without Er:YAG and Nd:YAG lasers, generate more thermal heat, increasing the risk of bone necrosis, decreasing the healing rate of the bone and osseointegration with the titanium implant surface, increasing inflammation, and decreasing the mechanical and biological stability of the implant.

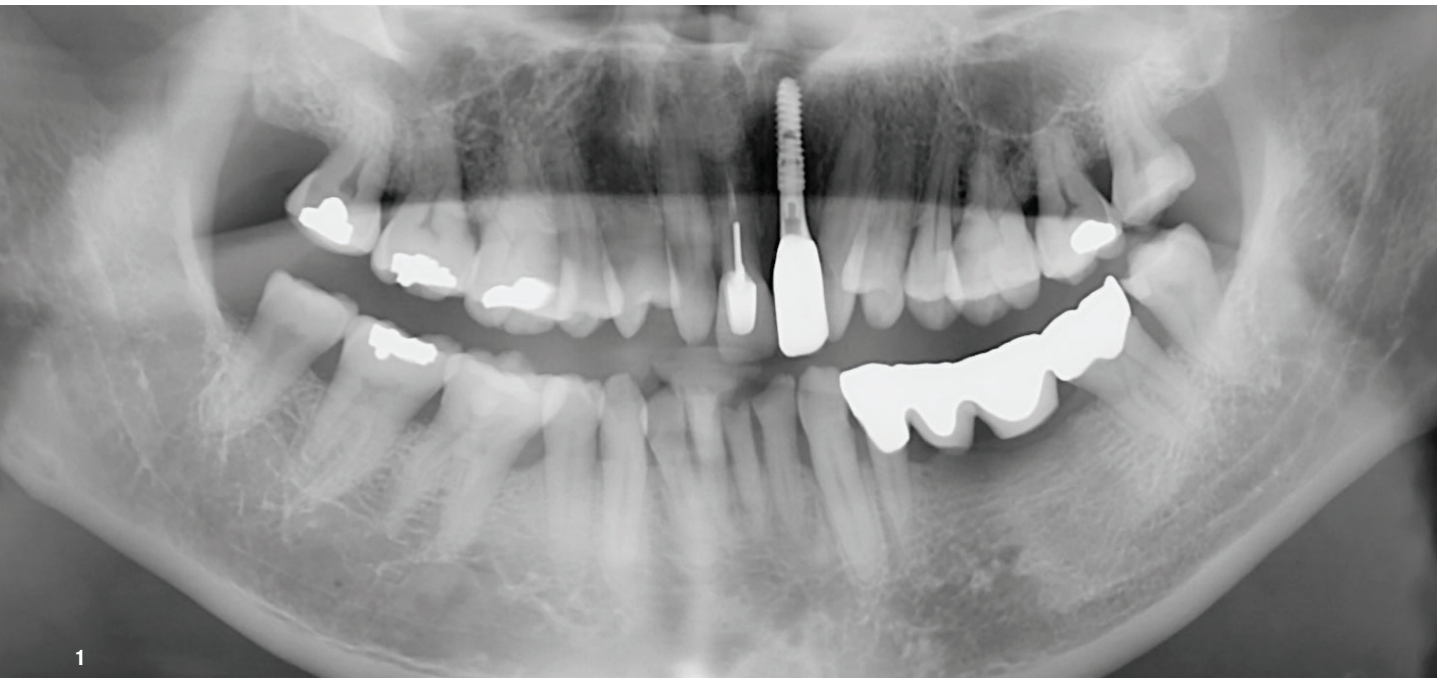

Fig. 1: Pre-op radiograph.

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Fig. 2: Pre-op image of the treatment area. **Fig. 3:** During Er:YAG laser degranulation of the osteotomy site.

Patient description

The patient had mild hypertension and used antihypertensive medications such as ramipril (angiotensin-converting enzyme inhibitor), propranolol (beta-blocker) and amlodipine (calcium channel blocker). He also was taking levodopa/carbidopa for Parkinson's disease. He had an extensive history of previous dental work (Fig. 1). His oral hygiene was fair, as he brushed his teeth twice a day, but only flossed once or twice a week. He had general chronic moderate periodontitis. The TwinLight periodontal laser-assisted cleaning procedure using both Er:YAG and Nd:YAG lasers (Fotona) was completed on the patient to improve the clinical attachment of the teeth, reduce the pocket depths and improve periodontal bone regeneration.

The patient had had a bridge extending from tooth #34 to tooth #37 for over ten years (Fig. 2), but there had been extensive decay underneath the mesial surface of tooth #37 in the past. The patient wished to have implants placed in sites #35 and 36, to cut the bridge distally at tooth #34 to preserve the crown, to remove the old crown on tooth #37, to remove decay from mesial aspect of tooth #37 and to place a new complete gold crown. The treatment plan was to perform Er:YAG and Nd:YAG laser-supported degranulation, surface modification and disinfection of the osteotomy sites before implant placement in sites #35 and 36.

Treatment

On the day of surgery, the patient was prepared on the surgical chair with a bib and facial cover. The patient had already taken two capsules of amoxicillin (1,000 mg) a day before the surgery, and a 0.12% chlorhexidine rinse was given to the patient to rinse with before surgery. One carpule of 4% articaine and 1:200,000 adrenaline was administered for the left inferior alveolar nerve block and two carpules of 2% lidocaine and 1:100,000 adrenaline were administered for buccal and lingual infiltration all around the areas of the buccal and lingual mucosa of sites #35 and 36. Three tubes of leucocyte- and platelet-rich fibrin (L-PRF; 12-minute centrifuging at 2,700 rpm; EBA 200, Hettich) and one white tube of F-PRF (folded platelet-rich fibrin; 3-minute centrifuging at 1,500 rpm) resulted from blood drawn from the patient's arm.

A #15 scalpel was used to raise a full-thickness envelope flap along the gingival crest from the distal aspect of tooth #34 to the mesial aspect of tooth #37. A guided surgery kit with a fabricated surgical guide was used for preparation of the osteotomies with a sequence of osteotomy drills before placement of the implants. Specifically, for site #35, we used an initial regular-diameter osteotomy drill to mark the osteotomy site and then a 3.5 × 7.0 mm drill and a 4.0 × 7.0 mm drill. The osteotomy site was left for laser treatment before implant placement. For site #36, we used an initial wide-diameter osteotomy drill to mark the osteotomy site and then a 3.5 × 7.0 mm drill and a 4.5 × 7.0 mm drill. The osteotomy site was left for laser treatment before implant placement. The osteotomy drills were used at a setting of 800 rpm with saline water turned on at a medium setting.

Laser parameters

The following sets out the steps of using the Er:YAG and Nd:YAG laser system (LightWalker AT S, Fotona) on the osteotomy site. An Er:YAG H14 handpiece was used with

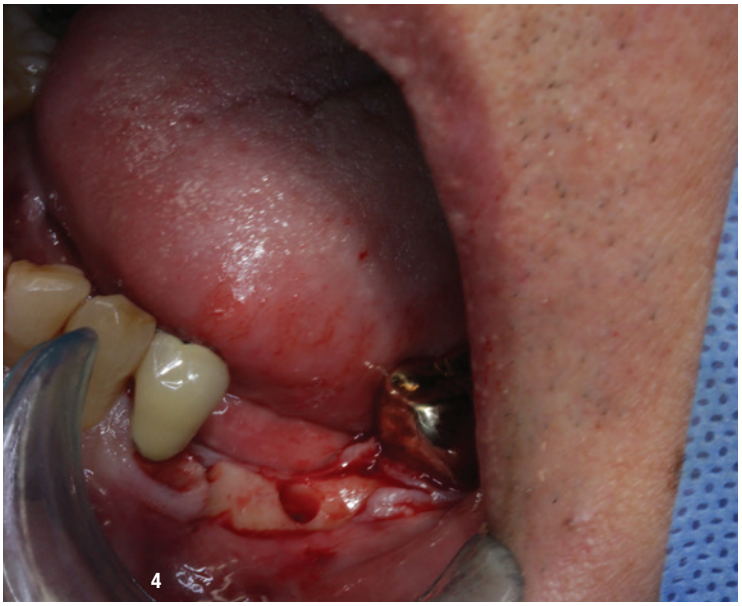

Fig. 4: Osteotomy site immediately after laser treatment.

a cylindrical 12/1.3 fibre tip at 160 mJ and 20 Hz, in SP (short pulse) mode and with a 5:4 water–air spray to degranulate the tissue, as well as provide superficial disinfection and ablation on both the bone surface and the soft tissue overlying the osteotomy site (Fig. 3). Degranulation mode removed all remaining soft tissue in and around the bone. An Er:YAG H14 handpiece with a cylindrical 12/1.3 fibre tip at 50 mJ and 30 Hz, in MSP (micro-short pulse) mode and with a 5:4 water–air spray was then used for superficial disinfection along the osteotomy socket and to conservatively open up the bone marrow spaces along the socket walls. Choosing this setting is gentler on the osteotomy site without removing more bone, which is critical for the stability of the implant and placement. This in effect will increase the speed of healing, decrease inflammation, increase bone–implant contact, increase mechanical stability, increase biological stability and increase surface modification for better cell attachment. An Nd:YAG 300 µm fibre tip non-contact with the bone at 2 W and 20 Hz and in MSP mode was then used for deep disinfection of the osteotomy site (Fig. 4). This allows for increased removal of any periopathogens that may contribute to the failure of implant osseointegration. Care was taken to ensure that blood in the socket site was removed with high speed and that it did not interfere with the Nd:YAG laser. No decortication of bone was required in this case, as there was ample bleeding from inside the osteotomy site. These steps allowed us to skip physical curetting, making it more comfortable for the patient and less time-consuming.

Using a surgical guide, a 4.5 × 7.0 mm Hiossen ETIII SA implant (Osstem Implant) was placed in site #35 with a regular no-mount driver and a 5.0 × 7.0 mm implant was placed in site #36 with a wide-diameter driver. L-PRF was

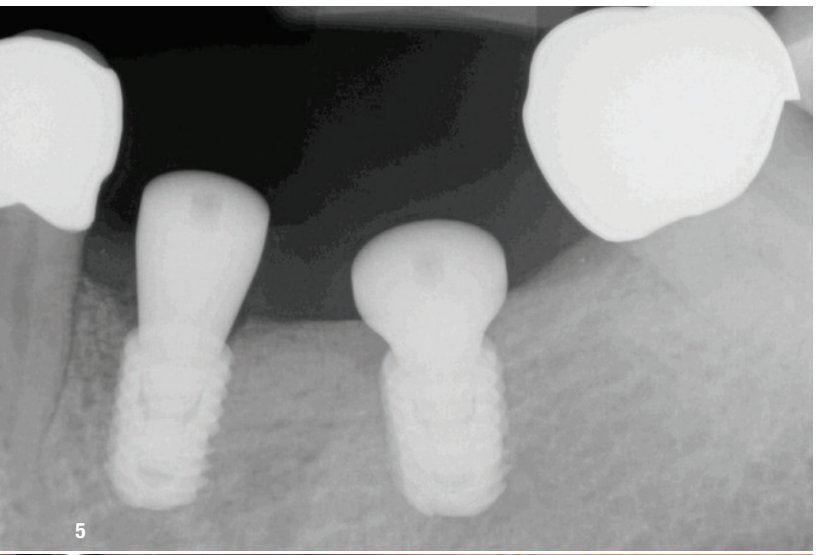

Fig. 5: Radiograph after 45 days of follow-up. **Fig. 6:** Almost complete primary closure of the tissue after 45 days of follow-up.

placed on top of each implant and then a 5×5 mm Hiossen long-necked healing abutment was hand tightened on to implant #35 and a 6×5 mm healing abutment on to implant #36. Cytoplast PTFE sutures were placed.

Postoperative instructions and pain management

Photo-biomodulation was performed twice, two days apart, with the Genova Nd:YAG handpiece in non-contact mode at 0.5 W/cm^2 and 10 Hz in MSP mode for 1 minute per spot at the implant sites for pain management and better regeneration of the tissue.

The patient was prescribed amoxicillin (500 mg) for one week and a 0.12% chlorhexidine rinse for one week. He only took ibuprofen (400 mg) twice for the first two days for pain management.

Observations and results

The patient was comfortable throughout the implant surgery and did not feel any pain. Mild bleeding was observed during the soft-tissue incision for the envelope flap. Moderate bleeding was observed after osteotomy preparation with the conventional osteotomy drills. The Er:YAG degranulation mode produced some increased bleeding on the bone surface. Surface modification of the socket site with Er:YAG also produced more bleeding. Ultimately, after the implants had been placed, the bleeding subsided. Moreover, placing membranous L-PRF underneath the healing abutments ultimately contained the bleeding.

The patient had mild chronic pain and mild localised oedema around the implant sites for two days after the surgery, and these symptoms resolved over time. Photo-biomodulation was performed for a second time two days after the surgery, and this further decreased the inflammation and pain. By this time, primary closure of the tissue had begun. Three weeks later, the patient returned for removal of the PTFE sutures. There was no more bleeding or oedema. The soft tissue was still in the process of healing, but the patient was asymptomatic, and there was almost complete primary closure of the tissue after 45 days of follow-up (Figs. 5 & 6).

Conclusion

The dual-wavelength approach using Er:YAG and Nd:YAG lasers for degranulation, surface modification, disinfection and photo-biomodulation of osteotomy sites is indispensable for the long-term success of implant placement.

about the author

Dr Sean Chiu completed his BS in molecular biology in 2002 and his DDS at New York University in the US in 2009. He was a BITES Institute implantology member from 2012 to 2018 and completed the Laser and Health Academy master's programme in laser dentistry between 2019 and 2021. He has been practising dentistry since 2009.

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Immediate implant placement and bone grafting of a maxillary central incisor: A seven-year follow-up

Prof. Su Yucheng, China

Dental implant therapy aims to provide a long-term, successful aesthetic and functional result that meets the patient's expectations and demands. A patient has the best chance of a favourable outcome when there is a sound understanding of his or her chief complaint and a correct diagnosis is made. In addition, clinical decision-making should be based on the patient's condition and needs. Therefore, these must be accurately assessed.

Clinical history and interview, extra-oral and intra-oral examination, additional investigation methods, risk assessment, and referral to or consultation with other specialists are all ways to collect data that could be helpful in diagnosis. In our daily practice, this information helps us establish an effective and practical individual treatment plan for each patient. There are no shortcuts to achieving long-term successful aesthetic effects. The only way clinicians can achieve successful implantation and restorative treatment is to strictly adhere to the treatment plan and discuss with the patient the possible scenarios that may be encountered during the implant treatment journey. Moreover, despite the high success rate for dental implants, complications are still possible. Therefore, maintenance therapy should always be part of treatment, and its goal is to prevent peri-implant disease and, consequently, ensure long-term implant stability.

The following clinical case describes a successful immediate implant placement with bone augmentation in the aesthetic zone of a young patient. The patient showed no clinical or radiographic complications throughout seven years of clinical and radiographic follow-up and maintenance therapy. The outcome met all the patient's expectations.

Initial situation

A 25-year-old, systemically healthy female patient, a non-smoker on no medication and with no allergies, presented to our clinic. Her chief complaint was that the crown of an anterior tooth had been lost a few days before, having been loose for some time. She was eager for a natural-looking replacement but was concerned about damage to the adjacent teeth. In addition, she expressed her desire for a quick and fixed definitive restoration of the maxillary central incisor and to obtain a bright smile with uniform, even teeth and a smoother look. Moreover, she stated that she did not want to be left with a gap in her anterior teeth during the treatment.


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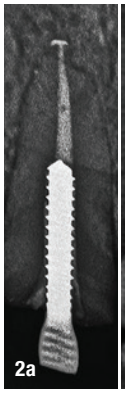
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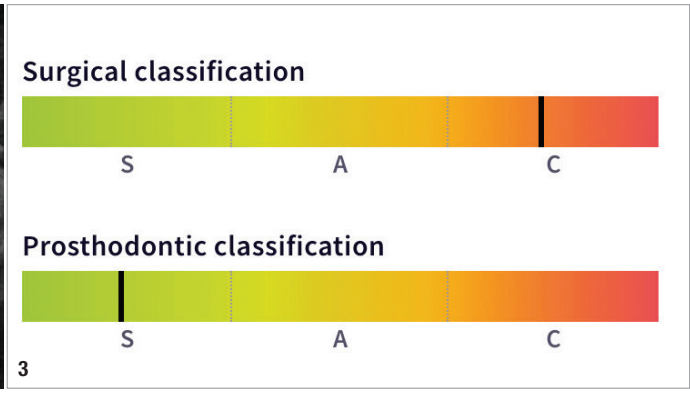

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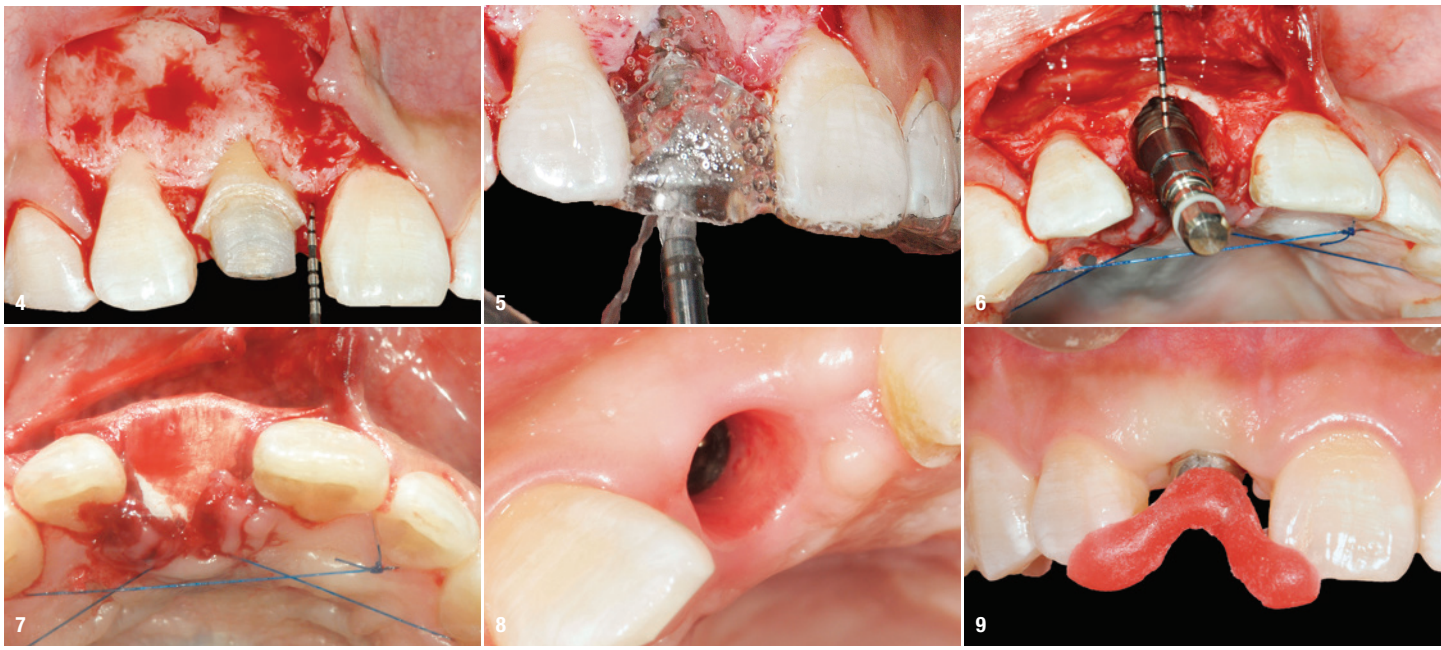

During the extra-oral examination, her smile revealed a medium smile line and showed the cervical margins of the crowns of teeth #14–24. The intra-oral examination revealed mild gingivitis and regular plaque control. After the crown of tooth #11 had been completely removed, a pigmented stump was found, and it was positive for the vertical percussion test (Fig. 1). The radiographic evaluation showed thin facial bone, failed root canal therapy and a post, periodontal ligament widening and root resorption of tooth #11. Otherwise, no local infection was observed (Figs. 2a & b). The SAC Assessment Tool classified this clinical scenario as surgically complex but straightforward in terms of prosthodontics (Fig. 3).

Treatment planning

Immediate implant placement with bone augmentation and delayed loading was decided on after a detailed discussion of the various treatment options with the patient. The main steps of the treatment workflow included:

1. clinical and radiographic assessment;
2. preparation of the surgical guide;
3. extraction of hopeless tooth #11;
4. immediate placement of a Straumann Bone Level implant with flap elevation to ensure facial bone integrity;
5. filling of the gap between the bone and implant with autogenous bone and a xenograft material;
6. placement of a collagen membrane to cover the grafting materials;
7. splinting of the provisional crown to teeth #12 and 21;
8. placement of a healing abutment six months after surgery (second-stage surgery); and
9. delivery of a definitive cement-retained crown two weeks after second-stage surgery.

Surgical procedure

The surgical guide was first tested on the patient's dental arch to ensure a proper fit. The area to be operated on was anaesthetised with local anaesthesia (2% lidocaine with 1:100,000 adrenaline). An open-flap technique for preserving the papilla was performed to gain adequate access to the future implant site (Fig. 4). Tooth #11 was extracted with minimal trauma to the surrounding tissue and the palatal flap fixated with suture (Fig. 5).

The surgical guide was placed in the mouth to ensure insertion of the implant in the optimal 3D position and to visualise the future soft-tissue margin, which would ideally be located 3 mm coronal to the implant shoulder. The Straumann surgical cassette was used for preparing the implant bed, strictly following the drilling protocol (Fig. 6). The osteotomy was prepared to a diameter of 2.2 mm, which was then widened to 2.8 mm and finally to 3.5 mm. The preparation depth was checked with the 3.5 mm diameter depth gauge. The final implant bed preparation included profile drilling and subsequent tapping. An implant (Straumann Bone Level, SLActive, 4.1 × 10.0 mm) was inserted at a speed of 15 rpm and torqued to 35 Ncm. The implant was placed in its ideal prosthetically driven position with a gap distance of 2 mm between the facial bone and the implant surface (Fig. 7). The gap around the implant shoulder was filled with a mix of autogenous bone and xenograft and covered with a collagen membrane.

The provisional restoration, an ovate pontic, was immediately placed in position #11 and splinted to teeth #12 and 21 to allow for proper healing, to shape the under-


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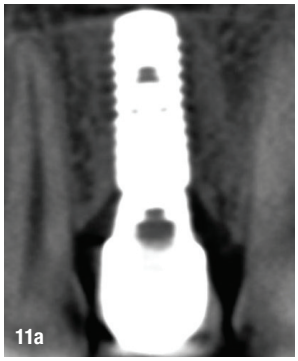
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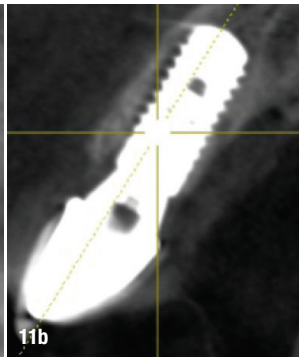
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lying peri-implant tissue and to enable assessment of any necessary phonetic or aesthetic adjustments. Instructions on oral hygiene were given, and the occlusion was checked.

After the implant placement, the patient underwent routine check-ups, and no signs of pain or infection were found. After the sutures were removed, the soft- and hard-tissue preservation seemed uneventful.

Prosthetic procedure

Six months after implant placement, the intra-oral examination showed healthy soft tissue around the implant. The implant had osseointegrated. A healing abutment was placed in second-stage surgery.

Two weeks later the healing abutment was removed. The soft-tissue profile showed optimal healing (Fig. 8). The implant site was irrigated with 0.12% chlorhexidine, the impression coping was placed and hand torqued, and a radiograph was taken to verify adequate placement of the impression coping. An alginate impression was taken of the mandibular arch, and a conventional impression with a closed-tray transfer technique using polyvinylsiloxane was taken of the maxillary arch (Fig. 9).

A cement-retained ceramic crown was delivered by the laboratory. A satisfactory aesthetic outcome with a natural bone contour was achieved. Furthermore, the patient's smile revealed a medium smile line with pleasing aesthetics (Fig. 10).

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CoDE Lead

After the final restoration, it was critical that the patient understood the need for regular monitoring and maintenance to ensure long-term implant stability. Scheduled annual follow-up visits included oral hygiene control and, if appropriate, a dental radiograph. At the seven-year control, the patient presented with healthy peri-implant and periodontal tissue, and the CBCT images showed adequate peri-implant bone levels (Figs. 11a & b).

Treatment outcomes

The patient had been afraid of losing her anterior teeth. She assumed that the treatment would be painful and complicated owing to the necessary bone augmentation procedure and the aesthetic location. We treated her with a dental implant seven years ago, and she told us at the most recent consultation that she was still highly pleased with the results.

about the author

Prof. Su Yucheng works at the Peking Union Medical College Hospital and Chinese Academy of Medical Sciences and is the chairman of the Beijing dental implant training college, which has been a Straumann Center of Dental Education since 2022, all in Beijing in China. He is a fellow of the International Team for Implantology and of the International College of Dentists. He is a member of the academic committee of the Chinese Academy of Medical Sciences, a special member of the Chinese association of oral implantology and chairman of the subsociety of oral implantology of the Chinese Stomatological Association.

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Screw-retained restoration of a maxillary first premolar

Dr Anthony Bendkowski, UK

Dental implants are widely accepted as a successful method for replacing missing teeth. The success of dental implant treatment depends on many factors, such as implant design, surgical technique, bone quality and patient factors. The aim of this case report is to present a step-by-step description of the implant treatment and restoration of a patient who had lost a maxillary first premolar, from the initial osteotomy preparation to the final restoration.

Case presentation

A 71-year-old female patient presented to our practice with a heavily restored dentition. She had lost her crowned maxillary right first premolar due to root fracture three months before (Fig. 1) and wanted a fixed restoration. Pre-op radiographic assessment confirmed that there were no anticipated issues (Fig. 2). After a detailed examination, a treatment plan was drawn up. We decided to place a screw-retained crown supported by an OmniTaper EV implant (Dentsply Sirona).

A full-thickness envelope flap was raised with relieving incisions, and the initial small round guide drill was used to mark the implant position. The site was enlarged with OmniTaper drills of different diameters, following the recommended drilling protocol. The initial osteotomy preparation was performed with a 2 mm diameter OmniTaper drill at no more than 1,500 rpm and with copious external irrigation with saline according to the surgical protocol. The site was then enlarged with a 3 mm diameter OmniTaper drill and next with a 3.4 mm diameter OmniTaper drill. Final enlargement was performed with a 3.8 mm diameter OmniTaper drill (Fig. 3).

An OmniTaper try-in implant was then inserted to verify the insertion path and appropriate depth of 13.0 mm (Fig. 4). Cortical preparation was performed with a 3.8 mm diameter OmniTaper crestal drill as appropriate for bone density. The crestal drill was used up to the first mark, representing a 2 mm countersink appropriate for the bone density encountered (Fig. 5).

An OmniTaper EV OsseoSpeed implant with a premounted TempBase EV was then inserted into the site (Fig. 6). The TempBase EV was removed, and a cover screw EV was placed (Figs. 7 & 8). The wound was

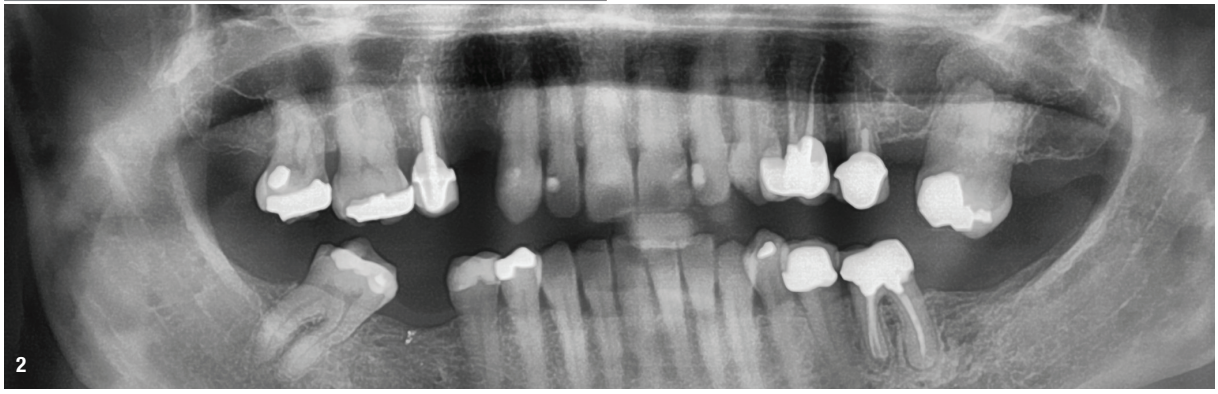


Fig. 1: Situation before surgery. **Fig. 2:** Pre-op radiographic assessment confirming a well-healed situation.

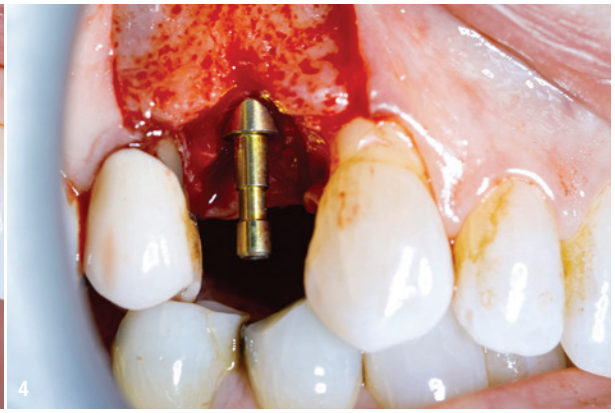


Fig. 3: Final enlargement performed with a 3.8 mm diameter OmniTaper drill. **Fig. 4:** Insertion of an OmniTaper try-in implant with a diameter of 3.8 mm to verify the insertion path and appropriate depth.

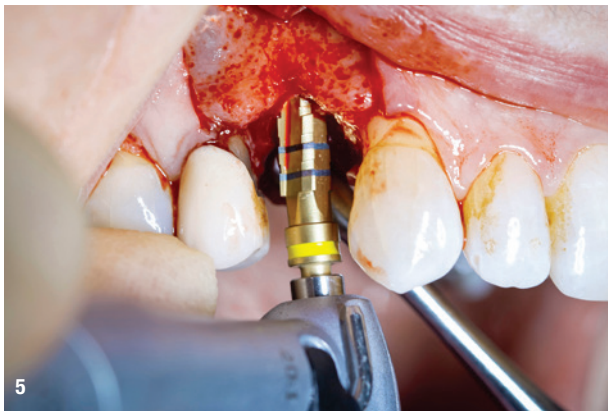
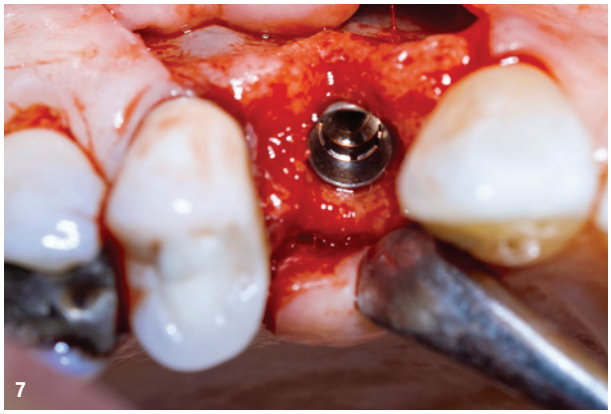


Fig. 5: Cortical preparation with a 3.8 mm diameter OmniTaper crestal drill. **Fig. 6:** OmniTaper EV OsseoSpeed implant with pre-mounted TempBase EV.



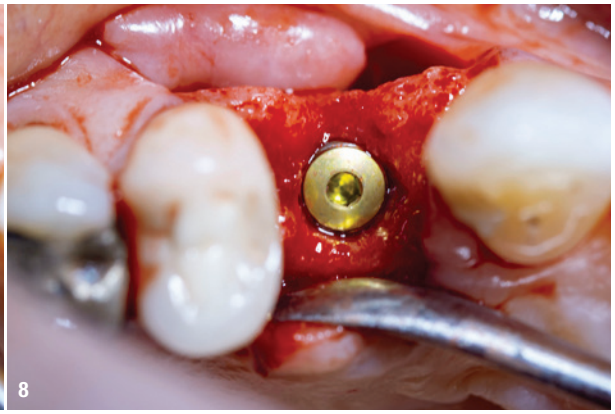
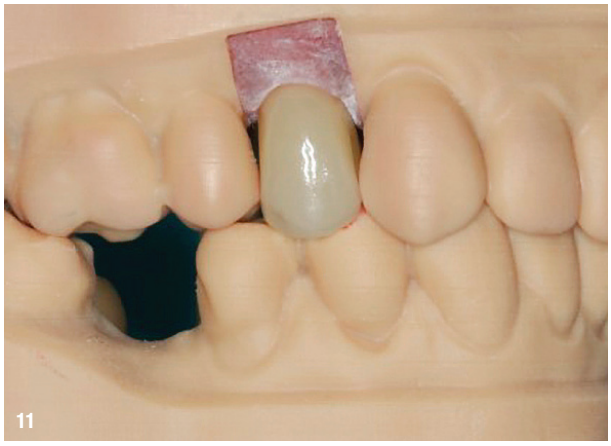


Fig. 7: Implant (3.8 × 13.0 mm) in site #14 and the TempBase EV removed. **Fig. 8:** Cover screw EV (M) *in situ*.

Fig. 9: HealDesign EV (M) abutment placed. **Fig. 10:** Atlantis IO FLO inserted for capture of a digital impression with Primescan.



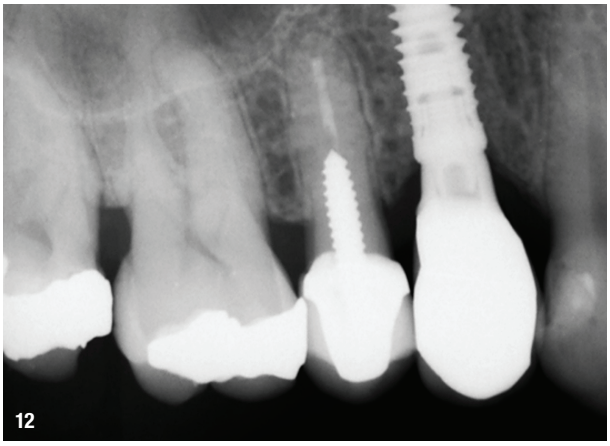


Fig. 11: Atlantis CustomBase solution, consisting of an Atlantis crown, an Atlantis abutment and an Atlantis abutment screw, supported on an implant analogue on the model. **Fig. 12:** Radiographic evaluation verifying the final restoration.

closed with PGA sutures. Three months later, second-stage surgery was performed, and a HealDesign EV abutment was placed (Fig. 9).

A digital impression using an intra-oral scanner (Primescan, Dentsply Sirona) was then captured using the Atlantis IO FLO for a digital restorative workflow (Fig. 10). An Atlantis CustomBase solution, consisting of an Atlantis crown, an Atlantis abutment and an Atlantis abutment screw, was fabricated (Fig. 11). After seating, a radiographic evaluation was performed to verify the final restoration (Fig. 12). The final restoration showed excellent soft-tissue adaptation and an aesthetic outcome (Fig. 14). The patient was extremely satisfied with the outcome of the treatment and the fixed restoration.

Conclusion

This case report highlights the successful placement of an OmniTaper EV implant in a patient with a heavily restored dentition. The use of an intra-oral scanner and impression components for the prosthodontic and technical digital workflow allowed for precise planning and execution of the treatment plan. The use of the OmniTaper drill system allowed for efficient and predictable placement of the implant, while the Atlantis CustomBase solution provided a customised restorative option for the patient.

The success of this case is a testament to the importance of careful treatment planning, precise execution of the surgical protocol and the use of advanced digital technology in implant dentistry. Like with any implant case, close collaboration between the surgical and restorative teams is critical to ensuring a successful outcome for the patient.

Fig. 13: Excellent soft-tissue adaptation and an aesthetic outcome.

about the author

Dr Anthony Bendkowski is an oral surgery specialist in practice limited to implant reconstructive surgery with two clinics in London and the south-east of England. He has over 30 years of experience in both the surgical and restorative management of implant cases. He is a past president of the Association of Dental Implantology, an examiner for the Royal College of Surgeons of Edinburgh Diploma in Implant Dentistry and a contributor to the postgraduate dental implant programme at Brighton and Sussex Medical School in the UK. He is co-chair of Bromley, Bexley and Greenwich LDC and an honorary consultant at King's College Hospital NHS Foundation Trust in London in the UK.

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The quest for safe and sterile implants

An interview with Dr Dirk Duddeck, Germany

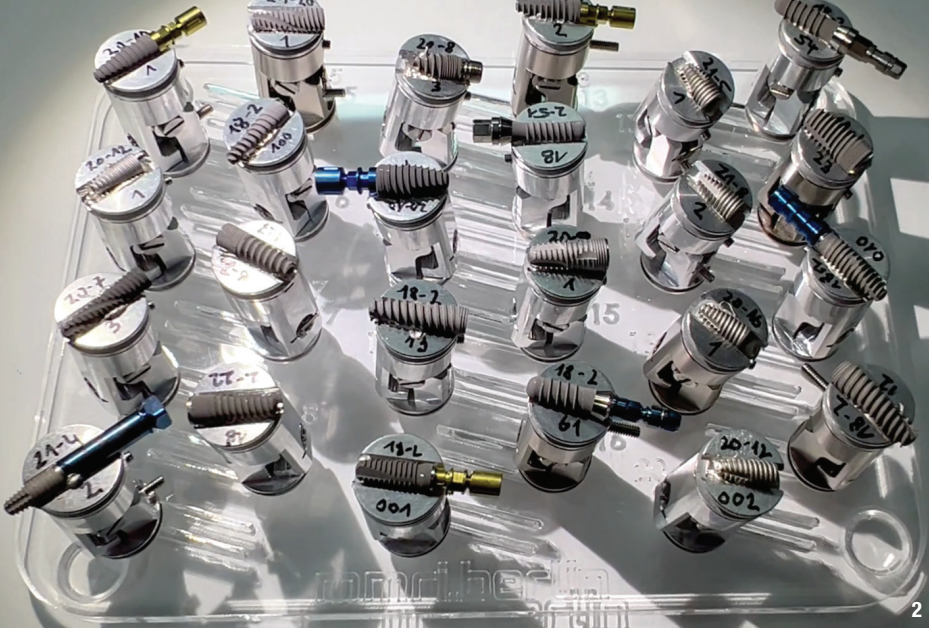
Dental implants have revolutionised the way we treat missing or damaged teeth, giving patients a permanent and natural-looking solution. However, reports of sub-standard and contaminated implants have brought the quality of these devices under intense scrutiny. In this interview, we will be speaking with Dr Dirk Duddeck, the founder of the CleanImplant Foundation, a non-profit organisation dedicated to promoting high-quality, clean and safe dental implants for patients. Through its extensive research and advocacy efforts, the CleanImplant Foundation is leading the charge in ensuring that dental implants are not just safe but also effective in providing the desired results. Join implants—**international magazine of** oral implantology as we get a closer look at the work of the CleanImplant Foundation and learn about its efforts in ensuring the highest quality and safety for patients receiving dental implants.

Fig. 1: Dr Dirk Duddeck, founder and head of research at the CleanImplant Foundation. (© CleanImplant Foundation)

> "It becomes particularly interesting when colleagues report to us inexplicable early implant failures or peri-implantitis shortly after placement."

Dr Duddeck, as a non-profit organisation, the CleanImplant Foundation is dedicated to increasing the safety of medical devices and evaluating the factory cleanliness of dental implants. How many implant systems have you inspected or, to put it more precisely, analysed in the scanning electron microscope (SEM)?

From the inception of quality assessment tests on sterile-packaged implants, we have evaluated the surface cleanliness of over 300 implant systems from approximately 250 manufacturers. Every two to three years, we undertake a comprehensive study of the implants in the marketplace. Current batch samples are supplied by manufacturers on request, or if they choose not to participate in the study, the samples are blind purchased.



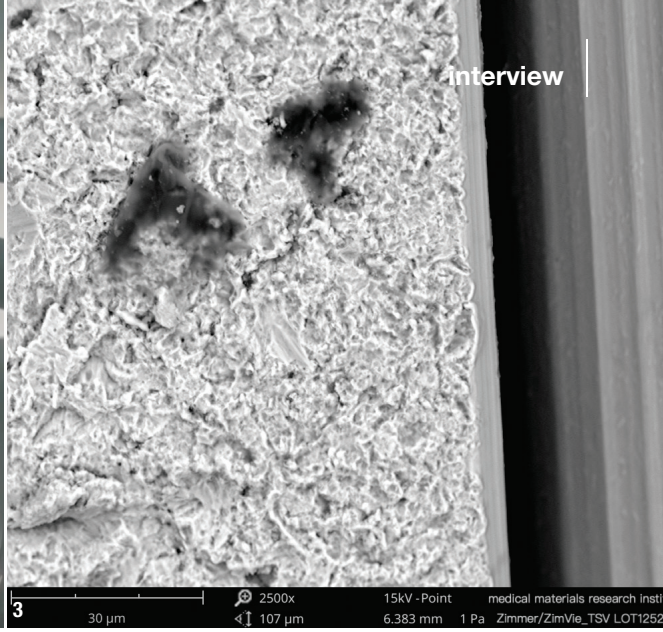


Fig. 2: Sterile implants mounted on a sample holder waiting for SEM analysis. (© CleanImplant Foundation)
Fig. 3: Organic contaminants on the entire implant shoulder–identified as silicone-containing plastic residues (polysiloxanes) by ToF-SIMS.

How can dentists and clinics with a focus on implantology benefit from the work of the CleanImplant Foundation?
On our website (www.cleanimplant.com) dentists can find implant systems that have proven their cleanliness every two years across various batches and have been awarded the Trusted Quality Seal. However, every practitioner can contact us directly. It becomes particularly interesting when colleagues report to us inexplicable early implant failures or peri-implantitis shortly after placement. In these cases, we have found implant samples from the same batch typically demonstrate clinically relevant amounts of plastic particles, residues from manufacturing or packaging, cell-toxic residues of aggressive cleaning substances such as dodecylbenzene sulphonic acid or lubricants such as perfluoropolyether.

How can you identify these contaminants so accurately? The SEM is not suitable for this, right?
Yes, you are correct. We combine two spectrometric methods to analyse unknown substances. In the SEM, we can see where high-carbon particles collect on the implant. With information about the localisation or accumulation of the foreign particles, subsequent time-of-flight secondary ion mass spectrometry can be used to determine the composition of the substances. In several cases, these essential findings enabled manufacturers to eliminate the cause of contamination and deliver residue-free implants after the corresponding quality management improvement.

Do these substances have any effect on healing after the placement of the implant?
It can be assumed that these substances significantly interfere with osseointegration or completely prevent it in contaminated areas. After phagocytosis by macrophages, those contaminants can trigger a storm of pro-inflammatory cytokines, resulting in bone resorption and soft tissue degradation. This year, the CleanImplant Foundation will conduct an elaborate study on this matter with the University of Zurich. Given the increasingly high reported levels of peri-implantitis, it is likely that the effect of particulate and thin-layered dirt particles on sterile-packaged implants is under-estimated as a contributing factor.

How have companies reacted to your analyses?
Our mandate is to encourage manufacturers and suppliers to engage in a constructive dialogue. Sadly, some companies have not yet cooperated with our efforts, as they have chosen not to believe that foreign particles are clinically relevant, despite evidence to the contrary.

The CleanImplant Foundation will once again be exhibiting at the International Dental Show in Cologne in Germany in March. What can users and manufacturers expect?
At this year's show, we will have an SEM at our booth in collaboration with Thermo Fisher Scientific. Those colleagues who bring sterile-packaged samples of their implant systems of choice for assessment will be able to view the level of surface cleanliness under the SEM. Manufacturers will be shown the nature and scope of our analyses as well as the results from a European-funded project that enables us to count and identify particles using artificial intelligence. On Thursday, 16 March, all manufacturers are invited to the fifth group and expert meeting. We look forward to sharing insights into the micrometre universe and unknown surface views of implants that colleagues will bring to our IDS booth (Hall 14.2, Booth O042).

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CleanImplant Foundation

Dr Dirk U. Duddeck

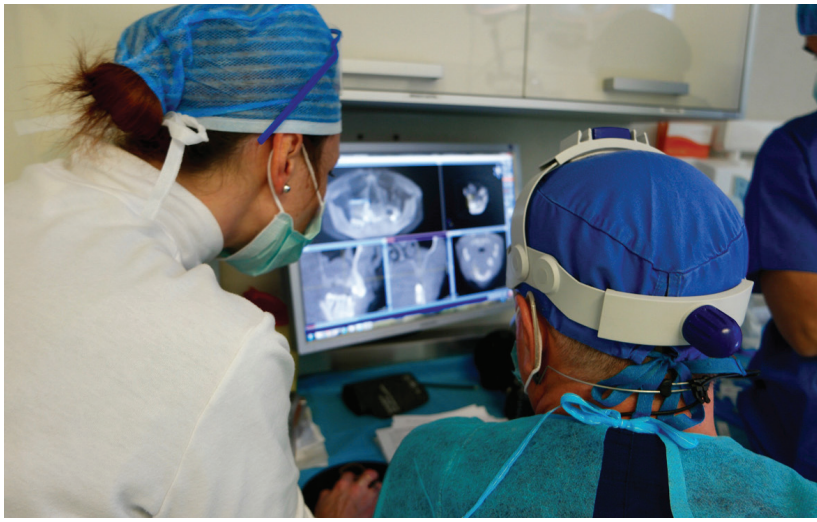
Acting against the silo effect

An interview with Dr Tiziano Testori, Italy

Dr Tiziano Testori is the founder and director of Lake Como Institute, a leading institution in dental education located in Italy. With extensive experience in the field of dentistry, Dr Testori is recognised for his expertise and insights on the latest trends and developments in dental education. As a lecturer at Lake Como Institute, he has played a key role in shaping the curriculum and delivering high-quality dental education to students. In this interview with implants—**international magazine of** oral implantology, he discusses the importance of considering the scientific evidence and reputation of presenters in evaluating courses, as well as the benefits of taking a holistic approach to patient care.

What's your view of the exponential growth of extra-clinical educational courses in dentistry?
Increasingly, I am receiving information regarding courses, basic training sessions and webinars that cover extra-clinical topics. After some initial reticence, I started to pay attention to some of these programmes and found myself bewildered by the huge range of topics on offer; I had no idea that there were all these things that we needed to know in order to carry out our jobs. I come from a generation of dentists who had the opportunity to deal with their own clinical training and apply it directly to patients in their own practices, and we never perceived that we needed anything more. I remember though that even clinical training in recent years has seen a multiplication in techniques to be learned and modifications of techniques that are difficult to take in and master.

What has guided your decision-making on what educational courses to take?
I long ago adopted a method for finding my way around clinical research findings and education, and I have adopted it for extra-clinical topics as well: the scientific evidence on the topics discussed and the reputation of those communicating on them. The world is rapidly evolving, and our profession is not exempt from it. The risk of the silo effect, that is, being focused on a single aspect and impervious to everything else, is real, and we can no longer afford to ignore it. Our education must also extend to fields beyond dentistry.



Continuing with this reflection on what training areas to devote attention to, I wondered, how much do we know beyond our profession as dentists? Do we retain sufficient recollection of our studies in anatomy, general pathology, physiology and pharmacology or are we locked up in our daily silos? Do we have room only for dental knowledge?

How do patients benefit from this new extra-clinical knowledge?
Patients do not hand us their teeth to repair as one would a smartphone or an appliance; teeth are part of biologically and physiologically complex systems that are strongly interrelated. Patients' oral health is a continuous sequence of causes and effects to be investigated beyond their mouths too.

What would you recommend to your peers?
I think that the time has come to break down the walls of our silos and build a system of knowledge that targets the whole patient. We should propose a therapeutic alliance that goes beyond dental issues for which we are approached. We should anticipate that moment by communicating with our patients and providing all the necessary tools for their awareness. We should establish a relationship with and communicate with other specialists, including practitioners involved in dental disease-related pathologies. We should expand our responsibility to patients' experience before, during and after their visit to our practices.

All this is possible today. The important thing, in my opinion, is positioning ourselves correctly without ever abandoning the method of evaluation that I have always followed: the scientific evidence on the topics under scrutiny and the reputation of those communicating on them.

contact

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Dr Tiziano Testori

Neodent celebrates 30 years of history

A global player in dental solutions that restore smiles and confidence

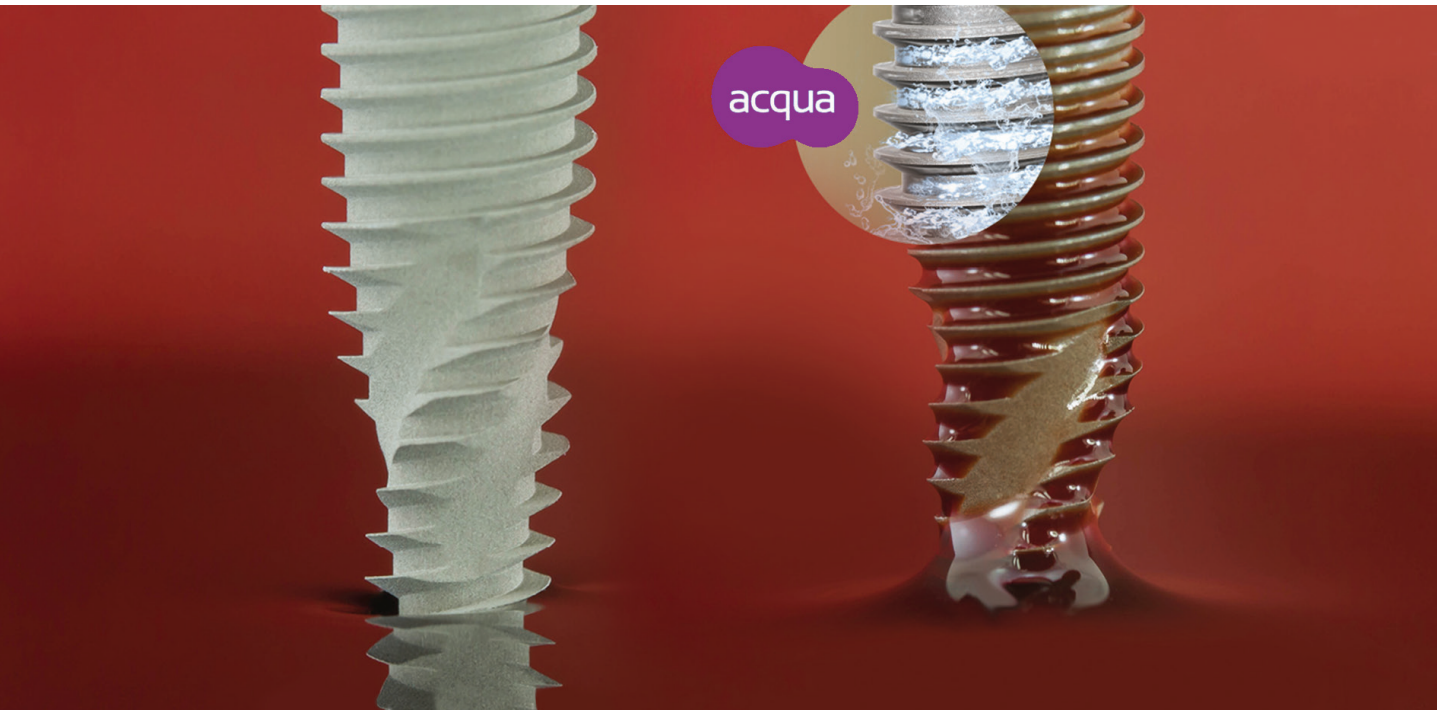
As 2023 begins, Neodent is ready to celebrate what it does best: creating new smiles every day. This year marks the 30th anniversary of the brand, which has been providing immediate treatment protocols and changing lives of patients with millions of smiles worldwide since 1993. Founded by a dentist, for dentists, Neodent is now present in over 80 countries, thanks to its commitment to maximising predictability and enabling long-lasting results through its unique features designed based on key biological principles. To celebrate this milestone, Neodent is hosting the 30 Year World Tour in the five regions where it has a presence. These in-person events will bring together customers and experts to strengthen relationships.

The 30 Year World Tour will feature Neodent founder Dr Geninho Thomé and CEO Matthias Schupp, who will celebrate the brand's history and philosophy and promote its innovative portfolio.

Throughout its 30-year history, Neodent has learned that celebrating is a choice, and as long as it exists, it will choose to bring smiles to people's lives. The manufacturer provides direct, progressive and affordable dental solutions that bring innovative and reliable solutions to the community.

Next-level implant surface treatment

Patients' increasing expectations for shortened treatment duration represent a significant challenge for dental professionals. Enjoy more treatment flexibility to create the optimal tooth replacement outcomes for all indications, from single tooth to fully edentulous. The Neodent



The Neodent Grand Morse system feature the Acqua hydrophilic surface.

“I am proud to see how much we have grown over time since our foundation, in 1993, until our first ceramic implant system, in 2022. I just see reasons to smile. In 2015, with the full acquisition by the Straumann Group, we started to spread our philosophy around the world and the gratitude to see Neodent present in over 80 countries with great results makes me happy and excited for the next 30 years. I would like to thank everybody who was been part of our history until now and I invite you to celebrate with us the evolution of implantology, technology, the dentistry market, aesthetics, patients and Neodent.”

Dr Geninho Thomé, founder of Neodent.

Grand Morse system offers a helix implant design featuring the innovative Acqua hydrophilic surface designed to maximise primary stability and predictability in immediate protocols for all bone types. The Helix Grand Morse implant allows for tailored treatment options according to the specific clinical situation, considering the biological principles and respecting the fundamentals of implant dentistry.

The implant–abutment interface is crucial for a successful long-term functional and aesthetic result. The Neodent Grand Morse connection offers a unique combination based on proven concepts: platform switching and an internal hexagon and deep 16° Morse taper connection for a strong and stable connection designed to achieve long-lasting results.

The Neodent Acqua surface is an improvement on the successful NeoPoros surface designed for high treatment predictability and developed to achieve successful outcomes even in challenging situations, such as soft bone or immediate protocols.[1–4] The NeoPoros surface is made using abrasive sandblasting with controlled grain oxides, followed by acid etching, creating uniform cavities in the implant surface. The hydrophilic Acqua surface presents a smaller contact angle than the NeoPoros surface when in contact with liquids, providing greater accessibility of bodily fluids to the implant surface.[2]

With a strong focus on research and development, Neodent is constantly pushing the boundaries of what is possible in dental technology. Its products are backed by rigorous clinical testing and real-world results, and the company has a proven track record of success in helping dental professionals deliver high-quality, affordable dental care. With its commitment to innovation, quality and customer satisfaction, Neodent pursues the best possible care for patients. The company’s mission is simple: to improve lives through better oral health. Join Neodent’s mission to change the world, one smile at a time.

contact

Neodent (Straumann Group brand)
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www.straumann.com/neodent

Literature

bredent medical

The all-round solution package for implantology

With ALL-IN-ONE, the bredent group presents itself as a all-round solution provider for dental therapy forms. Under the motto “360° Implantology”, the company offers a complete package for implant care.

Whether treatment planning, the correct choice of materials and gentle insertion of the implant or the prosthetic care—bredent accompanies users from start to finish.

360° Implantology is an open system that offers its users maximum flexibility. The bredent group has optimised its CAD/CAM systems so that, for example, the prefabs for making individual abutments function smoothly.

For a successful immediate treatment, the position of the implant is of great importance, which is why all bredent implants have great primary stability in all bone qualities. For over 15 years, bredent has been successfully on the market with its SKY fast & fixed therapy and has been able to bring a smile to more than 100,000 patients in this time. With the help of sophisticated, standardised procedures, edentulous patients can be fully treated with a small number of implants. And in just one day and with a success rate of over 98 per cent.

All bredent implants also have a back taper according to the “Bone Growth Concept”, which means they have a crestal bevel. This leaves more room for bone and soft tissue to support the growth of bone.

Get to know ALL-IN-ONE live at IDS 2023!

If you want to be convinced by bredent’s ALL-IN-ONE solutions in person, visit the International Dental Show (IDS) from 14 to 18 March 2023 in Cologne in Hall 4.2, Booth J080/K081. The team at the booth is looking forward to meet you!

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Fotona

A multiwavelength laser approach to successful implantology

Fotona’s award-winning LightWalker® and SkyPulse® dental lasers are widely recognised as uniquely versatile tools in dentistry and implantology. With high-precision Er:YAG lasers, they are perfect for the treatment of peri-implantitis, including the removal of granulomatous tissue from inflamed surfaces and direct implant decontamination. They are also highly suitable for fast and safe de-epithelialisation of the gingiva surrounding the extraction socket, which prevents the ingrowth of epithelium into the socket and produces a rough surface that enhances retention of the blood clot. In addition, LightWalker’s pulsed Nd:YAG and SkyPulse’s high-performance diode lasers allow for highly effective soft-tissue procedures with simultaneous coagulation and disinfection, as well as tissue regeneration, making them ideal for applications in implant surgery. Fotona’s comprehensive laser peri-implantitis and post-extraction treatment protocol utilising a multiwavelength approach for degranulation, disinfection, de-epithelialisation, clot stabilisation and photo-biomodulation, has proven to be a safe and effective solution for facilitating optimal treatment outcomes.

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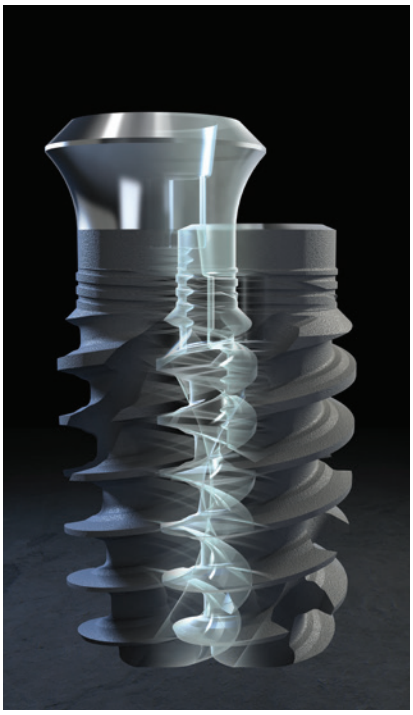
Straumann

Taking immediacy to the next level

Patients' increasing demand for shorter treatment times, the growing evidence for predictable success, and the positive effects on productivity and growth have made immediate treatment protocols a popular choice in implant dentistry. With Immedia-Xy™, Straumann offers an ecosystem of solutions that are designed to enable dental professionals to provide their patients confidently and efficiently with immediate temporisation—whenever possible and clinically sensible, whether in single tooth, multiple teeth, or full-arch cases. The Straumann® BLX and TLX implant systems come both with Dynamic Bone Management and have been developed to make immediate protocols achievable, predictable and minimally invasive in all bone types. They are featuring the same endosteal design which means the same drill set is shared for both systems. Thanks to the high mechanical strength properties offered by Straumann's Roxolid® alloy, the BLX and TLX lines allow for reduced invasiveness and the Ø3.75 mm is suitable for all tooth positions. BLX is the new generation of bone-level implants offering a simple yet versatile portfolio with under-contoured prosthetics for excellent soft-tissue management. With TLX, the proven benefits of tissue level are now available as well for immediate workflows. Throughout Straumann's wide portfolio of solutions for immediate treatment protocols, clinicians are genuinely empowered to treat a wide range of clinical indications, from the straightforward to the most challenging cases.



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3Shape

Wireless intra-oral scanner

TRIOS 5 Wireless is recognised for its innovative performance and design. A double winner at the UK's Dental Industry Awards, Dental Products Report also named TRIOS 5 one of the Top Game Changers of 2022. In an interview, Dr Sundeep Rawal, Senior Vice President of Implant Support Services at Aspen Dental, stated: "TRIOS 5 nails it."
TRIOS 5 provides excellent performance in a redesigned compact body. The scanner is 30% smaller than the previous 3Shape models, and delivers next-level ergonomics, effortless scanning, and improved hygiene.
The intra-oral scanner achieves an unique level of scanning simplicity with its groundbreaking ScanAssist technology that minimises misalignment and distortion in 3D models. With TRIOS 5, professionals can create a scan path they prefer. Furthermore, it has received clearance from the U.S. Food and Drug Administration. The scanner features all-day battery life with Smart Power Management. Its closed autoclavable scanner tip is protected by scratch-free sapphire glass. The new enclosed tip means TRIOS 5 never needs calibration.
For availability of 3Shape products in your country or region, please contact your reseller.

3Shape Germany GmbH, Germany
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www.3shape.com/de-de

High-tech in a unique setting

DGZI has announced a training partnership with Ritter Academy

On 14 and 15 October 2022, Motorworld Munich played host to the first training presented jointly by the German Association of Dental Implantology (DGZI) and Ritter Academy as part of the DGZI's implantology curriculum. Under the motto of "Learning by doing" of the Ritter Academy and Ritter Implants, the DGZI offered participants an unparalleled training experience using the latest technology in simulators for hard- and soft-tissue management with high-tech phantom heads.

With experienced DGZI lecturers and specialists leading the way, the weekend was dedicated to practical training at the highest level. The simulators were specifically developed and manufactured for implantology courses by Ritter Academy, allowing for a practice-oriented treatment process with the guidance of skilled professional staff.

The goal of this mandatory module within the implantology curriculum of the DGZI is to empower dentists to excel in everyday implant practice. Ustomed, a globally established manufacturer of surgical precision instruments, supports the course with surgical instruments and kits for bone grafting and processing.

A prerequisite for the course is mastery of the corresponding e-learning modules to ensure the requisite foundational knowledge and avoid hindrances during practical training. Under the guidance of DGZI specialists, the entire spectrum of dental implantology, including hard- and soft-tissue manipulation, is taught and participants are trained on duplicates of real patient cases, using these to plan, simulate and practise various situations from everyday implantology practice. The workstations are equipped with the instruments and materials (such as implantology kits—in this case those of Ritter Implants) of an implant dentistry practice. Models with artificial mucosa and periosteum are available, as well as radiographic units, CBCT devices and surgical guides for navigation surgery, specifically designed for the case in question. The maxillary sinus and the course of the inferior alveolar nerve are depicted and marked.

More time and emphasis are given to the practical part of the course. After a brief theoretical introduction by the speakers and the Ritter Academy, the individual steps are shown in a live demonstration and transferred to the workstations so that each step can be practised by the participants. Work is done in teams of two to strengthen the teamwork concept and demonstrate its advantages.

Learning outcomes

Through the surgical practice, participants learn how to plan and execute complex treatment cases. Areas covered include:

- applied anatomy;
- surgical procedure and incision guidance;
- implantation techniques such as bone spreading, bone splitting and bone condensing;
- principles of soft-tissue surgery (primary wound closure, various techniques for implant exposure, papilla formation);
- knowledge of advanced soft-tissue surgery in implantology and augmentation surgery or correction of soft-tissue deficiencies;
- principles and pathophysiology of bone transplants and intra-oral bone harvesting techniques;
- augmentation procedures and onlay bone block grafting, and membrane and shell techniques for stabilising bone replacement materials;
- sinus lift techniques (open and closed); and
- complication management.

Do not miss out on this unique opportunity to enhance your skills and stay ahead in the field of implantology. Join the event on 20 and 21 October at the dental training institute of the Ritter Academy in Biberach an der Riß in Germany. This special training experience will also be offered in English if there are a sufficient number of participants. For further information, please contact the DGZI secretariat.

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DGZI

Implant Solutions World Summit 2023—cutting-edge implant science and innovation

Dentsply Sirona

Dental professionals join world-leading experts in implant dentistry for this exclusive, state-of-the-art congress in Athens, Greece, on 8–10 June. Together, they will discover cutting-edge science, the latest innovations in digital dentistry, bone regeneration, and optimised implant treatment solutions, including EV implant family, for their patients—and enjoy the company of colleagues and friends from around the world.

The Implant Solutions World Summit brings together professionals who are passionate about elevating the dental industry and improving the quality of implant treatments and care for patients. The congress will take place at the InterContinental Athenaeum Athens hotel, close to Greece's famous Acropolis.

Scientific programme

The Implant Solutions World Summit will feature presentations from more than 40 world-renowned experts in implant dentistry, who will share best practices, expertise, and insights. Dental professionals will learn about managing implant complications, the connections between systemic and oral health, maximising aesthetics, controlling risk factors, maintaining peri-implant health, and more.

The programme is developed together with the Scientific Chairs—Dr Tara Aghaloo, USA, and Dr Michael Norton, UK—and the Programme Chairs—Steve Campbell, UK; Dr Malene Hallund, Denmark; Dr Mark Ludlow, USA; Dr Stijn Vervaeke, Belgium; and Dr Martin Wanendeya, UK.

"Peer-to-peer education is vitally important for our implant solutions community, and we are thrilled to bring implant professionals together from around the world to explore the latest innovations and science transforming implant dentistry" says Tony Susino, Vice President, Global Implant Solutions at Dentsply Sirona. "The event promises to be an inspirational opportunity for learning and networking as we glimpse into the future of implant dentistry and optimised patient care."

Innovative implant solutions and digital workflows

The Implant Solutions World Summit 2023, will also feature an interactive exhibition and sign up for exciting master class workshops to learn more about Dentsply Sirona's products, solutions, and workflows, including Dentsply Sirona's premium implant portfolio—DS PrimeTaper Implant System, DS OmniTaper Implant System and Astra Tech Implant System—OSSIX regenerative solutions, DS Signature Workflows for single-tooth, partial and full-arch restorations, the cloud-based DS Core platform for improved practice efficiency, and practice building.

The innovative, comprehensive implant solutions portfolio from Dentsply Sirona is designed to help practices grow their implant dentistry business and get the best results for their patients.

contact

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ITI International Team for Implantology

All about the patient: The ITI World Symposium 2024

The ITI World Symposium is back and better than ever: More than 50 world renowned speakers will present at the world's largest scientific implant dentistry event in Singapore from 9–11 May 2024. Building on its previous highly successful online edition, the ITI World Symposium 2024 once again puts patients at the centre of the action. Over three days, the more than 4,000 participants will experience real patients and their stories on stage. The speakers will discuss various treatment options based on the latest scientific evidence. But it does not stop there: world class clinicians will provide commentary on exclusively recorded clinical procedures live on stage.

"With our unique, patient-centred programme structure, we aim to combine practical, clinical insights with the discussion of scientific findings", explains ITI President Charlotte Stilwell. "We ran a survey in our community last year to identify the topics of currently greatest relevance, and these form the core of our scientific programme: soft tissue management, GBR/bone augmentation, immediate implants, peri-implantitis and the digital workflow."

Registration for the ITI World Symposium opens early April. ITI members as well as early registrations will benefit from significant discounts.

ITI International Team for Implantology
worldsymposium.iti.org

DGZI and Ritter Implants

Continued education and professional development

The German Association of Dental Implantology (DGZI) is proud to announce its collaboration with Ritter Implants Company, in which they participated in the recent AEEDC Dubai dental conference exhibition. At the event, the DGZI presented its renowned Curriculum of the German Board of Oral Implantology (GBOI) through its representative in the Arabian Gulf Countries, Dr Hisham Y. Abueljebain.

For the past 16 years, Dr Abueljebain has been successfully managing the implementation of the GBOI curriculum in Kuwait, and the e-learning platform designed by the DGZI has received great feedback from colleagues who have participated in the programme. The DGZI is now taking a step forward and offering a new curriculum for dental technicians for the first time. This programme will be available starting in September 2023 and will be delivered through the same e-learning platform as the dentist's curriculum, albeit with a limited number of modules for technicians. This exciting new course for technicians will be comprised of five modules, three of which will be conducted online, while the fourth and fifth modules will be face-to-face, providing technicians with hands-on experience in fabricating prosthetic crowns, bridges, and full mouth rehabilitation over implants. In addition to this new programme, the 10th batch of the GBOI curriculum for dentists will also begin in September 2023, and registration is now open for both dentists and technicians through the DGZI's website at www.gboi-kuwait.net.

The DGZI is thrilled to be offering these opportunities for continued education and professional development and wishes all participants a bright future and a challenging educational experience.

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DGZI

„Implant Dentistry Award“ 2023

CALL FOR POSTERS!

On the occasion of the 52nd International Annual Congress of the DGZI on October 6 and 7, 2023 in Hamburg, the DGZI will again present its "Implant Dentistry Award". Prizes will be awarded for scientific work in the form of posters, which will be published internet-based in a Digital Poster Presentation.

DGZI will pay the congress fee and the conference fee for the obligatory participation in the congress. The posters will be presented digitally only, no other form of submission is possible.

CLOSING DATE:
15.08.2023

Scan QR code now or visit
dgzi-2023.dpp.online/landing
and submit abstract digitally!

DGZI
Deutsche Gesellschaft für Zahnärztliche Implantologie e.V.

FDI supports WHO

New WHO antibiotic book addresses oral and dental infections

Launched during World Antimicrobial Awareness Week in November 2022, the publication provides evidence-based guidance on antibiotic use in healthcare settings to combat resistance.

According to the World Health Organization (WHO), by 2050 around 10 million deaths could take place each year due to antibiotic resistance. Members of the dental profession have an important responsibility to raise awareness to this imminent issue, as about 10 per cent of antibiotic prescriptions are issued by dentists. During the World Antimicrobial Awareness Week 2022, WHO launched the *WHO AWaRe (Access, Watch, Reserve) antibiotic book* aimed at providing evidence-based guidance on antibiotic use in primary healthcare and hospital settings.

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Oral and dental infections chapter considers comprehensive input from FDI

FDI's Antimicrobial Resistance (AMR) Working Group led by Dr Wendy Thompson provided significant inputat the drafting stages of WHO's antibiotic book. In particular, the AMR Working Group held meetings with WHO to provide feedback and input on the chapter focused on oral and dental infections to ensure that it was coherent with the other chapters. FDI is pleased to report that many of its suggestions were taken into consideration in the final publication, including changing the name of the chapter from "dental infections" to "oral and dental infections" as well as consulting local and national guidelines for the use of antibiotic prophylaxis before dental procedures. Guidance on which dental conditions and infections are appropriate for antibiotic treatment was also provided. Additionally, two articles written by FDI experts were cited in WHO's publication.

FDI commends WHO for highlighting the very important topic of antibiotic resistance and stands ready to support further efforts to tackle this issue. Health professionals around the globe are encouraged to share this publication as widely as possible to counter antibiotic resistance and ensure a healthy future for all.

Source: FDI World Dental Federation

Research about non-surgical treatment protocols

Guided periodontal infection control is "more time-efficient than conventional therapy"

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Both conventional section-wise non-surgical therapy (CNST) and a guided approach to infection control where patients receive full-mouth debridement preceded by oral-hygiene education (GPIC) are effective non-surgical treatment protocols for periodontitis. A recent study, now summarised as JCP digest 107, sought to evaluate the relative effectiveness of the two approaches in terms of clinical and patient-centred outcomes in the general population, under conditions found in practice.

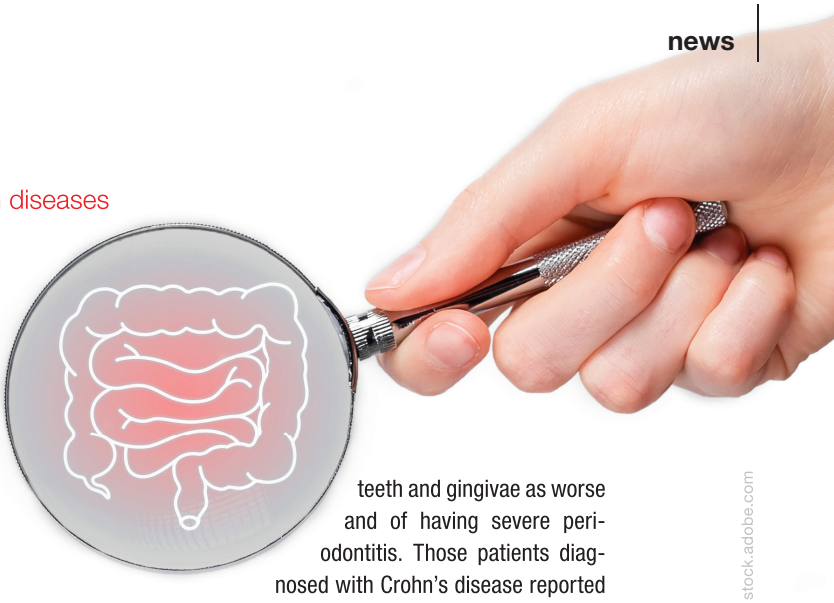
The research, performed in Gothenburg in Sweden, involved 95 dental hygienists randomly assigned to perform either CNST or GPIC on patients, who were given a clinical examination at the six-month follow-up at which they were also questioned about their self-perceived oral health. Periodontal pocket closure was the primary outcome. The researchers found that pocket closure at six months amounted to 70% with both treatment modalities. However, GPIC was more time-efficient, which provided benefits both to patients and clinicians.

The research was summarised for JCP digest by postgraduate students at the EFP-accredited programme in periodontology at Ghent University in Belgium.

Source: EFP

Researchers found evidence for connection between diseases

Large-scale study links periodontitis and inflammatory bowel disease



Even though previous research has suggested a link between periodontitis and inflammatory bowel disease (IBD), the relationship and its impacts have not been fully explored. In a large-scale study—the first of its kind in a European population—researchers from Malmö University, in collaboration with other Europe-based researchers, have found evidence for a strong connection between the two diseases. IBD is a group of inflammatory disorders of the gastrointestinal tract, principally Crohn's disease and ulcerative colitis. The incidence of IBD is increasing worldwide, and more than 1.3 million people in Europe suffer from it. Its cause remains unknown, but an inappropriate immune response is considered to be involved. Periodontitis and IBD are chronic inflammatory diseases with similarly complex pathogeneses. "Both diseases can be described as a strong overreaction of the immune system against a theoretically relatively mild bacterial trigger. You can say that the immune system attacks one's own body," explained co-author Prof. Andreas Stavropoulos from the Faculty of Odontology in a university press release.

The study was conducted in Denmark and the data collected via an online questionnaire answered by around 1,100 patients with IBD (of whom approximately half had Crohn's disease and the rest ulcerative colitis) and around 3,400 matched controls without it. The evaluation of the survey responses showed that patients with IBD had a higher probability of perceiving the overall health of their teeth and gingivae as worse and of having severe periodontitis. Those patients diagnosed with Crohn's disease reported worse oral health than those diagnosed with ulcerative colitis and had higher odds of having lost more teeth than the control group.

"The study shows that patients with IBD have more periodontitis and fewer teeth compared to people without IBD. We also see that patients with IBD and periodontitis have an aggravated intestinal disease with a higher activity than patients with IBD who have no oral health issues," commented Prof. Stavropoulos.

Based on the study results, the research team concluded that patients with IBD should be kept under close surveillance in order to prevent the development of periodontitis and/or to slow down its progression. "Similarly important, it may be that treatment of periodontitis has a positive impact on the management of IBD," emphasised Prof. Stavropoulos. The study, titled "Periodontitis prevalence in patients with ulcerative colitis and Crohn's disease—PPCC: A case–control study", was published in the December 2022 issue of the *Journal of Clinical Periodontology*.

Source: Dental Tribune International

Tylman research award

Prof. Burak Yilmaz awarded for outstanding research

"Error analysis of stages involved in CBCT-guided implant placement with surgical guides when different printing technologies are used."

Prof. Burak Yilmaz was the principal investigator on a project selected by the American Academy of Fixed Prosthodontics as the recipient of a Stanley D. Tylman Research Grant. Tylman grants are highly competitive awards given to researchers conducting "outstanding research" in the field of fixed prosthodontics.
The work of Prof. Yilmaz and his Master's student Dr Brandon Yeager was again recognised by the Tylman Research Committee this year. They received first prize in the 2022 Tylman Research Award Programme for the report titled "Error analysis of stages involved in CBCT-guided implant placement with surgical guides when different printing technologies are used". The outstanding research award will be presented at the annual meeting of the American Academy of Fixed Prosthodontics in Chicago in 2023.

Source: University of Bern

Congresses, courses and symposia

IDS – International Dental Show 2023

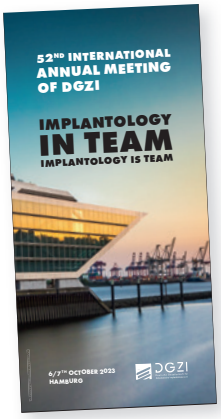
14–18 March 2023
Cologne, Germany
www.ids-cologne.de

EFP International Perio Master Clinic

5–6 May 2023
León, Mexico
www.efp.org

EAO Congress

28–30 September 2023
Berlin, Germany
www.eao.org



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Send us a text with length of 10,000 to 15,000 characters. We do not want to limit you in terms of article length, so please use the word count as a general guideline!

Numbered images in TIF or JPEG format, in a printable quality of at least 300 dpi.

Most important: we would like to introduce you/the mind behind the article. So please send us also your portrait photo with a short biography about your professional career and your contact information.

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